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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR JULY 1881.

ARTICLE I.

MAY IODIDE OF POTASSIUM EXCITE BRIGHT'S DISEASE? By I. EDMONDSON ATKINSON, M.D., Professor of Pathology and Clinical Professor of Dermatology in the University of Maryland School of Medicine, Baltimore.[1]

WHERE there is afforded opportunity of examining after death, the bodies of persons who have suffered from late syphilis, an astonishingly large number of them will be found to present evidences of disease of the kidneys. In 24 autopsies of syphilitic subjects, Lancereaux observed renal degenerative changes 8 times (*Gaz. Hebd.* 1, 1864, p. 502). Moxon detected alterations in these organs in 14 out of 25 post-mortem examinations of syphilitics at Guy's Hospital (*Guy's Hosp. Reports*, 1868, p. 329). It must be acknowledged, however, that if we consider the whole number of persons who have had syphilis, the proportion who develop kidney disease is exceedingly small. Indeed, with very few exceptions, syphilis and kidney disease would seem to exist in the relations of cause and effect only among those unfortunates who experience the late or tertiary manifestations of the affection.

Pathologists have long been aware that the diseased kidneys of syphilitic persons present differences as great in microscopic as in gross appearances, changes that may be encountered with equal, even with greater frequency, as results of other affections, as well as changes that are essentially syphilitic. Of the forms of disease to which I now refer, the most frequent by far is one that is not in itself syphilitic. This is lardaceous or albuminoid degeneration, and was first described as of syphilitic origin, by Rayer, in 1840 (*Maladies des Reins*, t. ii. p. 489). All subsequent

[1] Read at the meeting of the American Medical Association, at Richmond, May 4, 1881.

writers have remarked its frequency. Moxon, in the article already quoted, observed, in his 27 autopsies, lardaceous degeneration of the kidneys 11 times. But the frequency of lardaceous disease as the result of syphilis, may be more readily appreciated by studying the etiology of this form of degeneration. Thus Fehr (quoted by Roberts) reported syphilis as present in 34 out of 145 cases of lardaceous kidney. Dickinson (*Dis. of Kidneys*, part ii. 1877, p. 473), compiled 83 cases of lardaceous disease from the dead-house reports of St. George's Hospital, the presence of syphilis being noted 18 times. This form, when of syphilitic origin, is identical with the same degeneration in persons free from the disease. It is true that some writers, Beer more especially (*Die Eingeweide Syphilis*, 1867), describe peculiar conditions and distributions of the process, to be met with only in syphilitics; but these lack confirmation. On the other hand, there is a form of renal disease quite characteristic of syphilis, the circumscribed, new formation known as gummy tumour. This is of exceedingly rare occurrence. Moxon found it but once in his 27 autopsies, where there were 16 cases of renal disease. In Lancereaux's 24 autopsies, where kidney disease was detected 8 times, gummy tumours were met but once. Numerous cases of gumma of the kidney have been recorded, but the lesion is undoubtedly a rare one. From 1 to 20 may be encountered, and their size may vary from a mere point to the dimensions of "a small potato." It is stated, upon the authority of Beer, Moxon, and others, that purely parenchymatous nephritis may be dependent upon syphilis. It must be very infrequent. But there is still another form of renal alteration of syphilitic origin.

Generally diffused, interstitial hyperplasia and subsequent fibrosis of the kidneys, not associated with lardaceous disease, is rare in syphilitics; and yet it is not uncommon to find these organs with circumscribed areas of interstitial hyperplasia, or of its cicatricial remains, distinct from ordinary gummy tumor. Just as one finds in other organs, notably, the liver, lungs, and testicle, syphilitic inflammation, not at all differing in their appreciable morbid appearances from simple inflammations, so, in the kidneys, we encounter diffused interstitial nephritis, that except for a disposition to more circumscribed distribution is like interstitial nephritis from other causes.

Where the process involves the entire organ, there is no way of deciding upon its specific origin. Most frequently, however, only a portion of the kidney is affected, and when considerable contraction has resulted from this form of interstitial disorder, it is often seamed with scars, which from their circumscribed arrangement, are very characteristic. It is not unlikely that localized cicatrices may sometimes result from the absorption of gummy tumours. A considerable degree of fatty degeneration of the epithelia of the tubules often accompanies these processes.

From the foregoing remarks, it will be seen that of the different altera-

tions to which the kidneys of syphilitics are liable, but one can be regarded as certainly syphilitic, the gummy tumour, the most rare of all. Diffused nephritis can only be recognized as *probably* syphilitic, when of limited and circumscribed extent. On the other hand, lardaceous degeneration, most often observed, is only a result of syphilis as it is a result of tubercle, of scrofula, of prolonged suppuration. Now, while it is certain that we may have these forms of disease due to syphilis, it by no means follows that disease of the kidneys in syphilitics is always of syphilitic origin. May it not arise from adventitious causes more often than is generally supposed?

It is evident, that apart from any influence that syphilis may exert in renal pathology, the kidneys of syphilitics are just as subject to morbific influences as those of healthy people, and that one should not necessarily attribute to this disease lesions that are not characteristically specific.

One occasionally finds in medical literature, statements that albuminuria and nephritic inflammation have been known to arise in consequence of the ingestion of the iodide of potassium. These reports, it is true, are few in number and quite vague in character, and yet they come from sources that entitle them to respectful consideration. Thus Van Buren and Keyes (*Genito-Urinary Diseases with Syphilis*, p. 380), state that it will sometimes happen—

"that patients with visceral syphilis, under protracted treatment, by large doses of iodide of potassium, will gradually show morning nausea, and upon examination their urine will be found light, slightly albuminous, and containing pale casts. In such cases the kidney-trouble is probably due to the irritation produced by the large amount of iodide of potassium passing through them, and the albumen and casts may be made to disappear, together with the morning nausea, by reducing the activity of the treatment. Several such cases have fallen under the author's observation."

In another place Keyes again writes (*Venereal Diseases*, 1880, p. 220): "I am certain that in some cases, slight, transient, albuminuria is produced by the prolonged use of the iodide of potassium in large doses." Mr. Jonathan Hutchinson in his famous address on syphilis before the Pathological Society of London (*Lancet*, 1, 1876, p. 204), thought that iodide of potassium, long-continued, might have had something to do with producing the long-continued albuminuria that preceded death in two cases of inherited syphilis in adults under his care. H. C. Wood (*Therapeutics, etc.*, p. 379), says: "During its passage through the kidneys, iodine undoubtedly exerts an influence upon these organs, as is shown by its producing albuminuria at times. It is indeed asserted, that it occasionally causes a true tubular nephritis." Statements such as these may be found in medical literature, but they lack definiteness, and can hardly be accepted as decisive. They must be received with a great deal of reserve, especially when we consider that the very extensive literature that has been devoted to the pathological effects of iodine and the iodides upon the

system, is singularly meagre in references to these actions upon the kidneys, while the diuretic action of these drugs is universally recognized, and abundant proof of the morbific action often exerted by them upon different organs and tissues is everywhere available.

It is remarkable that alterations of the kidneys have been but rarely observed as resulting from their ingestion. Rodet, writing in 1847, states that the ingestion of the iodide of potassium may induce nephritis, and records a case where the patient, 56 years old, took, for non-syphilitic disease, one gramme of the iodide daily for fifteen days, abundant hæmaturia resulting. This subsided after the medicine was discontinued, but recurred when it was again administered (*Gaz. Méd. de Paris*, 1847, p. 904). A very remarkable statement of Simon and Regnard may be found in *L'Union Médicale* (vol. 22, 1876, p. 26). It was noticed that two children (girls), to whose integument tincture of iodine had been applied over a limited surface, for different affections, betrayed some symptoms of iodism, along with a notable quantity of iodine in the urine, and albuminuria. Attention having been drawn to this fact, eleven children were submitted to the same treatment. Of these, four developed albuminuria. In three other cases, where the urine previous to the experiment contained neither iodine nor albumen, both became very evident after three days, soon ceasing to appear, but both reappearing upon the renewal of the application. Badin (*Thèse de Paris*, 1876), contributes in support of these observations two cases. The first patient, a phthisical girl nine years old, had tincture of iodine applied in front of and behind the chest. Albumen was detected in the urine after the third application, and disappeared after the iodine was abandoned. The second observation concerned a scrofulous girl, to whose skin tincture of iodine was applied. After the fourth application, the urine, which had been daily tested, became albuminous, regaining a healthy condition shortly after the conclusion of the experiment. Badin holds that this action is confined to children, the immunity of adults being complete; and that it results from the passage of metallic iodine through the kidneys. These very interesting observations have never been confirmed, and, indeed, do not seem to have met with the attention they deserve. Should their correctness be established, it would still remain undecided how the albuminuria is produced; whether, as claimed, by the action of free iodine upon the kidneys, or, as is not impossible, as the result of the simple covering of a considerable surface with an impermeable coating, such as has been known to produce similar effects under the use of a variety of substances.

A diligent search through a very extensive literature has afforded me only these scanty proofs of the irritating influence of iodine and the iodide upon the kidneys. On the other hand, while the almost entire absence of references to this subject in the very extensive discussions of the phenomena of iodism, during the last forty years, is, to say the least,

very suggestive, we have the distinct statements of several writers, that renal affections are not induced by the iodides. This was the experience of Ricord (*Bulletin de Thérapeutique*, 1842, p. 164), and other writers. Arneth, Pelikan, and Zdekauer never found in the bodies of animals treated with iodine the smallest trace of renal disease (*Med. Zeitschr. Russlands*, 1856).

It is certainly important that we should have definite knowledge concerning the extent to which the presence of these agents in the system is capable of exciting structural alterations in the organs and tissues, and that in our treatment we should not expose our patients to unjustifiable risks. If, however, it be necessary to expose them to these dangers, we should do so with a full consciousness of the same, and be prepared to obviate them as far as possible.

With a view to ascertain to some extent the general condition of the kidneys of persons who suffer from late syphilis, as well as to note the effects of anti-syphilitic treatment upon these organs, I have made a series of observations of cases that have come under treatment, for the most part, in my out-patient service, but also to some extent in the wards of the University Hospital and Bayview Asylum (the city almshouse). They do not represent selected cases, but comprise all that were available during the period of my investigations, suffering from late syphilis, and who, with very few exceptions, had been more than three years syphilitic. My notes embrace memoranda of seventy patients, of whom, those whose condensed histories are subjoined, presented evidence of renal alterations.

CASE 1.—Maria H., 32 years old, syphilitic for eight or nine years. Prostitute. Symptoms severe from the first. Much scarring. Present lesions ulcerative and extensive. General health much reduced. No dropsy. *Dec.* 29. Urine acid, sp. gr. 1022. Albuminous. Iodine reaction. Microscope reveals pus cells in abundance, but no tube casts. *Jan.* 24. Urine acid, sp. gr. 1017. Iodide reaction. Albuminuria. Microscope reveals a few hyaline and pale granular casts of the renal tubules. Pus cells and vaginal epithelium abundant. Has taken much iodide of potassium within the past year.

CASE 2.—John P., 30 years old. Peddler. Syphilitic for thirteen years. Paraplegia five years ago. Epilepsy for two years. Great mental hebetude. Cranial nodes. Excruciating headache. *Jan.* 24, 1878. Has been taking iodide of potassium for some time. Has had no ulcerative lesion. Never had dropsy, but six years ago had some swelling of the feet. Heart healthy. Urine pale and with iodine reaction. Small amount of albumen. Some hyaline tube casts, here and there studded with a cell of renal epithelium. *April* 8. Urine neutral; pale; sp. gr. 1016. A slight cloudiness to nitric acid and heat. No tube casts. *May* 17. Urine acid and high coloured; sp. gr. 1030. Iodine reaction. Albumen copiously present. *Jan.* 14, 1879. Urine alkaline, pale, without iodine reaction. Very slight amount of albumen. No tube casts. *April* 11. Has taken no iodide since last entry. Urine acid, and freely albuminous. Uric acid crystals. Hyaline tube casts, some of them studded with renal epithelium.

CASE 3.—Francis B., negro, 54 years old. Syphilitic more than twenty years. Has never had dropsy. Has led a hard life as a sailor on bay craft. Has now a gummatous ulcer of the penis. General health excellent. Heart normal. *Jan.* 15, 1878. Has had no treatment recently. Urine acid, and of sp. gr. 1026. Very slight precipitate to heat and nitric acid. Hyaline, pale, and coarsely-granular tube casts with renal epithelium. *Feb.* 23. Urine pale, acid, and of sp. gr. 1009. No albumen. No iodine reaction. No tube casts. *March* 22. Has taken iodide of potassium for several weeks until the past few days. To-day the urine contains no iodine, but has a small amount of albumen, also a few pale granular tube casts. *April* 27. Has not been taking iodide. Urine dark, sp. gr. 1020. No iodine reaction. No albumen, a few very pale hyaline tube casts. *April* 17, 1879. No treatment since last entry. Urine free from albumen and tube casts.

CASE 4.—Kate G., mulatto, 36 years old. Married. Syphilitic eight years. Very severe symptoms. Tubercular eruptions, ulcers, and gummy tumours of integument. Tibial and frontal nodes. Has taken much mercury and iodide of potassium. *Feb.* 4, 1878. Urine straw-coloured and acid; sp. gr. 1032. Iodine reaction. (Has been taking iodide since yesterday morning.) Slight albuminuria. Oxalate of lime crystals abundantly present. A few large and small hyaline tube-casts. *March* 6. Has taken no iodide for two weeks, until yesterday morning. Urine pale, acid; sp. gr. 1027. Iodine reaction. No albumen. Plenty of oxalate of lime, but no tube-casts. 14*th*. Has taken iodide regularly. Urine, acid; sp. gr. 1030. Iodine reaction. No albumen. No tube-casts. Oxalate of lime in abundance. *April* 8. Urine pale, alkaline; sp. gr. 1020. Small amount of albumen. *June* 3. Has taken no iodide for a month. Urine, acid and without iodine reaction. Small amount of albumen. Hyaline and granular casts. Oxalate of lime crystals. *Oct.* 24. Has been taking no iodide for some time. Urine faintly acid. No iodide reaction. No albumen. No tube-casts. Octohedra of oxalate of lime. *Nov.* 26. Gums slightly affected from biniodide of mercury, of which she has been taking $\frac{1}{12}$ gr. thrice daily, with her iodide. Urine gives iodine reaction; acid; no albumen. No tube-casts. *Dec.* 10. Has taken no iodide for four days. Urine free from iodine; acid; sp. gr. 1030. *March* 16, 1879. Has now been taking for several weeks 10 grains of iodide of potassium thrice daily. Urine shows no albumen to tests, but upon careful microscopic examination a few hyaline casts are detected. *April* 7. Has been taking iodine steadily. Urine, pale, acid; sp. gr. 1027. Iodine reaction. No albumen. Oxalate of lime and a few *mucous* tube-casts are discovered. *May* 15. Continues to take iodide as before. No albumen. No tube-casts. Oxalate of lime plentiful. *Feb.* 23, 1880. Has taken no iodide for some time. Urine normal. This patient has had upon one or two occasions slight swelling of the feet, but never decided dropsy.

CASE 5.—Mrs. O., coloured, widow, 59 years old. Has had syphilis for 14 years. Faucial ulcers. Destruction of bony and soft parts of nose (partial). *Feb.* 17. Has been taking iodide of potassium for several weeks. Urine acid; sp. gr. 1017. Iodine reaction. Small amount of albumen. Hyaline and pale granular tube casts, the former numerous. *March* 1. Urine normal. 10*th*. Has taken no iodide since last entry. Urine pale and acid; sp. gr. 1013. No iodine reaction. Minute amount of albumen. Microscopically, uric acid crystals, many *mucous* tube-casts

and a few hyaline casts. *April* 6. Urine faintly acid; sp. gr. 1013. (Has taken no iodide since last date.) No albumen. A few hyaline casts. *July* 1. Has taken no iodide since last date. Urine pale and acid; sp. gr. 1012. No iodine reaction. No albumen. No tube-casts. *Oct.* 22. Has not been taking iodide. Urine healthy. *Dec.* 12. Has taken no iodide since last date. Urine normal. *July* 9, 1879. Began to take iodide three days ago. Urine pale and faintly acid. Iodine reaction. No albumen. A few *mucous* tube-casts. 25*th*. Urine pale. Iodine reaction exceedingly feeble. No albumen. Triple phosphates in abundance. Swarms of vibrios. After diligent search, a single hyaline cast is discovered. *Oct.* 1. Has taken no physic for some time. Urine normal. *March* 1, 1880. No physic. Urine healthy.

CASE 6.—Sarah W., coloured; syphilitic for five years. Has had various systemic manifestations. Much "rheumatism." Has now phthisis pulmonalis. Has been taking mercury, iodide of potassium, and cod-liver oil. *March* 6, 1878. Urine shows presence of iodine; sp. gr. 1013. Albuminuria. Hyaline and granular tube-casts. *April* 17. Urine pale and acid; sp. gr. 1010. No iodine reaction. Albumen present in large quantity. Pale and coarsely granular tube casts. This woman had a large cavity in the apex of her right lung, and had been anasarcous.

CASE 7.—M. G., white, about 50 years old. Twenty years syphilitic. During this period has suffered from many forms of constitutional manifestations. Has been hemiplegic for several years. Last summer she took thirty-grain doses of iodide of potassium thrice daily. Is not at present under treatment. *March* 6, 1878. Urine very pale, alkaline; sp. gr. 1010. No iodine reaction. Albuminuria. *April* 17. Urine pale, faintly acid; sp. gr. 1006. No iodine reaction. Small amount of albumen. Hyaline and pale granular casts present.

CASE 8.—Kate M., negress, aged 46 years. Syphilitic nearly twenty-four years. Has had various eruptions and very much "rheumatism." Much headache, nausea, and vomiting. Has had dropsy. Heart normal. She is very obese. Has been taking iodide of potassium for twenty-five months. Now takes ten grains thrice daily. *April* 2, 1878. Urine pale; sp. gr. 1023. No iodine reaction (!). No albumen. Lozenge crystals of uric acid, and *mucous* tube casts. Likewise a number of hyaline and pale granular tube casts. 17*th*. Urine, acid; sp. gr. 1022. Iodine reaction. A barely perceptible amount of albumen is present. Uric acid crystals and hyaline and pale granular casts.

CASE 9.—Lottie L., coloured, 29 years old. Syphilitic for several years. Cachectic. Broad condylomata of perineum. Also of vulval and anal regions. Enormous hypertrophy of left labium majus and clitoris, equalling a cocoanut in size. Has been taking iodide of potassium for some time. At present has twenty grains thrice daily. *March* 31. Urine acid; sp. gr. 1011. Considerable pus present. Albumen in limited amount. Iodine reaction. Hyaline tube casts. Nausea and dyspepsia trouble her greatly. Has never had dropsy. Heart healthy.

CASE 10.—Annie B., 25 years old. Syphilitic ten years. Various constitutional manifestations, and extensive ulcerations. Several years since, her left leg was amputated, in consequence of intractable ulceration and necrosis. Has had much iodide of potassium, and is now taking 20 grains thrice daily. *April* 2. Urine straw-coloured, acid; sp. gr. 1016. Iodine reaction. Copious amount of albumen. Multitudes of hyaline, pale, and coarsely granular tube-casts, some studded with renal epithelium and

blood disks, some fatty. 17*th*. Urine acid; sp. gr. 1012. No iodine reaction. Highly albuminous. She has at several times been anasarcous, not so at present. Heart hypertrophied; valves normal. Casts not coloured by solution of iodine.

CASE 11.—John P., 21 years old, sailor. Syphilitic since 1872. Sore throat; iritis; "rheumatism;" periostitis. Has had various skin manifestations. Has taken iodide of potassium for seven weeks, never before. *May* 1, 1878. Urine high-coloured, acid; sp. gr. 1023. Iodine reaction. No precipitate to heat and nitric acid. No tube-casts present, but large numbers of oxalate of lime octohedra. 28*th*. Urine acid; sp. gr. 1030. Iodine reaction. Oxalate of lime octohedra of very minute size. A goodly number of mucous casts, and a few well-defined hyaline tube-casts. *June* 10. Urine acid; sp. gr. 1027. Iodine reaction. No albumen. Careful search through several slides reveals, in addition to oxalate of lime, octohedra and mucous casts, a single hyaline tube-cast. 16*th*. Urine acid. Iodine reaction. No albumen. Mucous tube-casts. No crystalline deposit. No hyaline casts. This patient had no history of dropsy. His heart was healthy.

CASE 12.—B. F. T., coloured, sailor, 25 years old. Syphilitic for four years. Frequent and various cutaneous eruptions. Iritis. Has had suppurative adenitis. Has been taking iodide of potassium for one year; now takes 10 grains thrice daily. *May* 18. Urine acid; sp. gr. 1020. Iodine reaction. No albumen. Microscopically, a few pus-cells and hyaline tube-casts, also a few pale granular casts. 26*th*. Urine acid; sp. gr. 1023. Iodine reaction. No albumen. Hyaline and pale granular tube-casts. *June* 1. Urine acid; sp. gr. 1030. Iodine reaction. No albumen. The microscope reveals only a few oxalate of lime octohedra. 16*th*. Has taken no iodide for several days. No iodine reaction. No albumen. No tube casts. Octohedra of oxalate of lime. 25*th*. Urine acid. No iodine reaction. No tube-casts. Oxalate of lime crystals. *July* 2. Has been taking iodide of potassium for one week. Acid urine; sp. gr. 1028. No albumen. Microscopically, a few oxalate of lime octohedra and many hyaline and granular tube-casts. (No history of dropsy.)

CASE 13.—J. M., white, sailor, 30 years old. Initial lesion twelve years ago. Various cutaneous affections. "Rheumatism." Iritis. Has been taking 10 grains of iodide of potassium thrice daily for five months. *May* 18, 1878. Pale and acid urine; sp. gr. 1017. Iodine reaction. No albumen. Some hyaline tube-casts are visible. 28*th*. Urine acid; sp. gr. 1022. No abnormal deposit. *June* 1. Urine acid; sp. gr. 1022. No albumen. No iodine reaction. No abnormal microscopic condition. *June* 16. Urine acid. Iodine reaction. No albumen. A number of sharply defined hyaline tube-casts. (He had not been taking iodide for nearly a month, but upon a recurrence of iritis, its use was resumed several days ago.) 25*th*. Urine acid. No albumen. Iodine reaction. Well defined and perfectly hyaline tube-casts.

CASE 14.—S. J., negro, 23 years old. Initial lesion in March, 1873. Copious general eruptions, alopecia, ulcerative lesions, pulmonary hemorrhages, dulness over right apex in front and behind. (Oct. 1877.) *June* 13, 1878. Pulmonary softening and cavities. Very pronounced general adenopathy. Urine pale, alkaline; sp. gr. 1020. No iodine reaction. Large amount of albumen. Microscopically, triple phosphates, but no tube-casts. 15*th*. Urine pale, alkaline. Albumen present in smaller amount. Many pus-corpuscles. No tube-casts.

CASE 15.—J. B., sailor, 32 years old. Initial lesion during the spring of 1872. Has now (July 14, 1879). ulcers upon legs, and many scars upon back, breast, and legs. The entire back is covered with scar-tissue forming an immense surface of cicatricial bands and depressions, the colour of which still shows the dusky red of recent repair. He took some iodide of potassium in 1874. Takes at present 4 grains, with $\frac{1}{16}$ gr. of bin-iodide of mercury thrice daily. Urine acid; sp. gr. 1020. Iodine reaction. No albumen. Associated with minute oxalate of lime octohedra and pus-cells, there are quite a number of casts of the tubules, some mucous, others ordinary pale granular casts, which are very numerous. *July* 29. Has taken no iodide for two weeks. Urine acid; sp. gr. 1022. No albumen. No iodine reaction. No tube-casts. Some oxalate of lime octohedra. *Aug.* 6. Urine acid; sp. gr. 1008. No iodine reaction. No abnormal deposit. No albumen.

CASE 16.—F. J. K., 45 years old, paperhanger. Initial lesion twenty-five years ago. Symptoms of varied character since that time. Has now deep ulceration on breast and abdomen. Some œdema of lower extremities. Line of hepatic dulness reaches below the level of the umbilicus, but recedes rapidly towards the left. Patient very thin and sallow, but not distinctly jaundiced. Some ascites. Girth at umbilical level 84 cm. General health much reduced. Has had paralysis of eye muscles. Can give no account of treatment, except of a profuse salivation. Takes now 8 grains of iodide of potassium thrice daily. *July* 21, 1879. Urine acid; sp. gr. 1006. Iodine reaction. Small quantity of albumen. No tube-casts. 23*d*. Urine pale and acid; sp. gr. 1010. Copious precipitate of albumen, and, microscopically, abundant tube-casts, granular and epithelial. Iodine reaction. *Aug.* 5. Urine acid; sp. gr. 1008. Iodine present. Much albumen. Hyaline tube-casts in small numbers. *Sept.* 9. General condition much improved. Ulcers healed. Urine albuminous and with hyaline and granular tube-casts. Heart enlarged, but valves healthy.

CASE 17.—H., sailor, 30 years old. Chancre five years ago. Various constitutional symptoms, but no ulceration. Right hemiplegia and aphasia for two months. Improvement under the iodide of potassium. *Aug.* 6. Urine not albuminous; acid; sp. gr. 1022. Copious deposit of oxalate of lime octohedra, and many hyaline tube-casts. 9*th*. Urine pale. Not albuminous. Iodine reaction. No tube-casts. Has not been taking iodide for several days. *Sept.* 5. Iodide resumed. Urine shows iodine reaction; acid. Mucous and hyaline tube-casts and oxalate of lime octohedra in small numbers. 23*d*. Urine acid; sp. gr. 1010. Iodine reaction. No albumen. No tube-casts. *Oct.* 22. Urine free from albumen and tube-casts, but with oxalate of lime in small quantity. Heart normal. No dropsy.

CASE 18.—An elderly sailor, wretchedly emaciated and with pronounced cachexia, just from shipboard. Unable to stand. Can give no history. Body is seamed with white flat scars. Breath disgustingly fetid from deep faucial and pharyngeal ulceration. Large nodes upon right radius and ulna. No dropsy. Vomiting incessantly for several days. Death in three days apparently of exhaustion, without paralysis and with intellect clear to the last. Urine, examined day of admission (Aug. 13), was acid, of sp. gr. 1014. Small amount of albumen. Plenty of tube-casts, mucous, hyaline, and granular. *Post-mortem examination:* Kidneys dark brown. Capsules moderately adherent. Left kidney much smaller than right. Both hard and contracted, but without circumscribed alterations.

No signs of gummy infiltration in any part of abdominal cavity. Upon the spleen, which was slightly enlarged, there was a flattened, whitish mass of cartilaginous hardness, lozenge-shaped and measuring 3×2cm.

CASE 19.—B. R. Ostler; Irish; married. Chancre in Jan. 1876, followed by severe constitutional symptoms. *Oct.* 15, 1879. Deep ulceration of right leg. Left testicle as large as a hen's egg, smooth, evenly enlarged, and painless. Patient is a large, burly man of dissipated habits. Urine acid; sp. gr. 1020. No albumen, but numerous hyaline and granular casts of the tubules. Begins to take iodide of potassium in 5 gr. doses thrice daily. *Dec.* 13. Urine free from albumen and tube-casts. Abundant uric acid crystals and oxalate of lime. 22*d*. Still takes iodide. Urine not albuminous. Copious deposit of amorphous urates and a few hyaline and granular casts.

Thus, it will be observed that of 70 cases investigated by me, 19 betrayed evidences of renal disturbance; 13 being characterized by the presence of albumen in the urine, constantly or at irregular intervals, while in 18 the microscope revealed, in the urine, casts of the renal tubules. In 12 cases albumen and tube-casts were simultaneously present. It is at once manifest that the kidneys were affected in very different degrees in the different cases. In few instances were the evidences of kidney disease pronounced and constant. For the most part, they were slight and transitory, and my observations are remarkable rather for the large proportion where renal disturbances were detected, than for their gravity. For the present, I propose to turn aside from many of the interesting features of these cases, and to ask attention to the influence that may possibly have been exerted by the iodide of potassium in the production of abnormal conditions. For the purposes of such an investigation, a certain number of my cases may be excluded, as offering examples of pronounced renal degeneration, the exciting cause of which was buried in obscurity, and others, where the changes, though slight, existed already when first coming under notice, and before the iodide of potassium was administered. Similarly, must be excluded those cases where the albumen or tube-casts, or both, though irregularly and transitorily present in the urine and perhaps in some instances dependent upon the iodide of potassium, could not with any show of probability be traced to the ingestion of this drug.

Before proceeding to consider the cases where iodide of potassium did seem to exert an influence in exciting the morbid symptoms, let me briefly call attention to the very large proportion of cases where oxalate of lime crystals will be found in the urine of persons taking the iodide. Thus, of a series of observations of 81 cases, oxalate of lime crystals (usually in abundance, sometimes scantily) were detected in 21 cases. The urine of these 21 patients contained lime oxalate octohedra 39 times; and in 29 of these observations the simultaneous presence of iodine was ascertained. Although we may no longer accept the views of Golding-Bird and Prout concerning an oxalic acid diathesis or oxaluria, but must consider the condition simply as a manifestation of lithiasis, a result of imperfect oxidation,

we may still in the present instance fairly assume that this incomplete oxidation is in some manner the result of the influence of the iodide of potassium in disturbing the digestive processes, or otherwise interfering with normal nutrition and metamorphosis.

The cases coming under my observation, where inconsiderable disturbance of the renal organs was associated with the administration of the iodide of potassium, have been, as I have shown, proportionally numerous. In only a few was it possible to attribute to the drug, with any degree of confidence, a causative influence in exciting the derangement. Simply asking attention, therefore, to the frequent association of evidences of renal irritation with the presence of the iodide of potassium in the circulation, I pass to the consideration of those cases where the iodide of potassium seemed to determine the abnormal condition of the kidneys. Case 5, for example, had been taking the drug for some weeks previous to my first observation, when albumen in small amount and hyaline and granular tube-casts were discovered. Shortly after the medicine was discontinued, the albumen disappeared from the urine, but it was not until the expiration of four months that the urine became perfectly normal, so far as concerns the presence of tube-casts, as shown by several examinations extending over a period of six months. My patient was not again seen for an additional six months, when the urine, examined three days after resuming the use of the iodide, revealed only mucous casts. Three weeks subsequently, diligent search revealed a single hyaline cast. Treatment was again suspended, and at the expiration of two months the urine was normal, as far as concerns albumen and tube-casts; and so it remained at the end of another six months. Case 12 likewise justifies to a great extent the suspicion that renal irritation, resulting in the formation of tube-casts, followed the ingestion of the iodide. This patient had been taking the remedy nearly one year. Albumen was not detected in the urine, but a number of hyaline and pale granular casts were discovered. A week later a similar condition was ascertained. Four days later the urine appeared normal, the ingestion of the iodide having been discontinued. The medicine was not renewed for a month, during which time the urine was twice examined and found healthy. A week after the treatment was recommenced, many hyaline and pale granular casts of the renal tubules were detected, but no albumen. Case 13 presents features showing the same tendency. The patient, a sailor 30 years old, had been twelve years syphilitic. He had been taking iodide of potassium in ten-grain doses, thrice daily, for five months. His urine, examined May 18, was acid, of sp. gr. 1017, and contained iodine. There was no albumen, but hyaline casts were present. *May* 28. Urine healthy. *June* 1. Urine without iodine, albumen, or tube-casts. *June* 16. (He had not been taking iodide since the middle of May, but upon the supervention of a new attack of iritis it was resumed several days previous to this date.) The urine was without

albumen, but contained iodine and a goodly number of well-defined hyaline tube-casts. *June* 25. Urine acid. No albumen. Iodine reaction. Well defined hyaline tube-casts. Case 15 also seemed to exhibit renal irritation from the ingestion of iodide of potassium. He had late syphilis and was taking four grains of iodide of potassium thrice daily. His urine contained hyaline and granular tube-casts, but no albumen. His iodide was stopped for three weeks. His urine, examined at the end of this period, showed no iodine reaction, no albumen, and, microscopically, no tube-casts. Examined again after a week, it remained free from abnormal appearances.

The following cases, abstracted from my note-book, though not included in the regular series of observations, on account of the recent date of the acquirement of syphilis, and not occurring in order, are of especial interest, as bearing upon the point under discussion :—

CASE 20.—S. F. B., a young negro, hostler, had a chancre of the penis about Christmas, 1877. April 6, 1878, he had a copious pustular syphiloderm, and complained of very extensive "rheumatism." For this he had been taking, for a few days, the iodide of potassium. His urine, examined on the above date, was acid, of sp. gr. 1022, and showed the presence of iodine to the test. There was no deposit to heat and nitric acid; no tube-casts. The treatment was continued more or less regularly until June 6, when the urine was straw-coloured and acid. The presence of iodine was ascertained; there was no albumen; crystals of uric acid and oxalate of lime were detected, and with them well-marked hyaline tube-casts. He now ceased to take the iodide, and his urine, at the end of two weeks, contained neither albumen nor tube-casts. The iodide was not resumed, and the urine examined July 9, 1878, Jan. 7 and 15, 1879, remained perfectly healthy.

CASE 21.—James W., Irish, 32 years old. Had a chancre during the latter part of Sept. 1877, followed by extensive papular syphiloderm. His urine, examined Jan. 15, 1878, was pale, of acid reaction, and of sp. gr. 1022. Albumen was not present, and the microscope revealed no signs of renal disease. Nodes beginning to appear on the tibia, accompanied by excruciating nocturnal pains in the knees, the iodide of potassium was now ordered, and was continued irregularly until March 28, with, for short intervals, a small amount of mercury. At the latter date his urine was pale, faintly acid, of sp. gr. 1028, and was free from albumen. There was a slight sediment of oxalate of lime octohedra, and some mucous tube-casts. The iodide was continued until early in May. The urine examined May 20 was without iodine reaction, but contained a small amount of albumen and numerous hyaline and pale granular tube-casts. The patient remained irregularly under treatment for some months longer, and then was not again seen until Sept. 4, 1879, when he had taken no medicine for a considerable time. His urine was free from albumen and tube-casts

Although, in the greater number of my cases, no definite connection between the iodide ingested and the albumen or tube-casts found in the urine could be established, the occurrence of the latter was unexpectedly frequent, and out of all proportion to what is usually supposed to prevail. It is true that the number where pronounced renal disease was present was

probably not much larger than will often be found in the wards and out-patient departments of large city hospitals. The point to which I especially desire to call attention is, that in so many of my patients albumen or tube-casts, or both, were detected, chiefly, however, as transitory phenomena, the former in minute quantity, the latter in the forms indicative of the smallest amount of renal alteration.

The question arises here, very naturally, of the significance of the presence of albumen in small quantity and of hyaline casts of the renal tubules in the urine. So far as concerns the albumen there seems to be no reason to believe that it is present in healthy urine, or to doubt that the presence in the urine of even a small amount indicates a departure from health. "We must admit, however, that it may make its appearance under such conditions as to show only a very slight deviation from the natural state." (Ellis, *Boston Med. and Surg. Journ.*, vol. cii., 1880, p. 361.) So far, then, as albumen was present in the urine of these patients, we may conclude that it was as a result of pathological processes. In quite a number of the cases, however, hyaline and pale granular tube-casts were the sole evidences of a morbid condition of the kidneys. I have already referred to the unusual frequency of oxalate of lime-crystals, and their probable dependence upon the ingestion of the iodide of potassium. Should the same influence determine the appearance of the tube-casts, to what extent may these be considered to be the results of tissue change? In other words, may hyaline casts of the renal tubules be found in the urine of persons whose kidneys are healthy?

It has not unfrequently been asserted that hyaline tube-casts may appear in urine from healthy kidneys. Henle, for example, claimed to have frequently discovered them in healthy kidneys. (*Handbuch der Systemat. Anat. der Mench.*) Charcot also states that they may appear in the urine when the kidneys are not diseased, and says that the same assertion has been made by Robin, Axel Key, and others (Tyson, *Phila. Med. Times*, vol. x. p. 293). Nearly all authorities, however, consider the presence of tube-casts, of any variety (except, possibly, the mucous), as indicative of morbid change in the kidneys. Bartels declares (*Ziemssen's Cyclopædia*, vol. xv.) that true casts are never found under normal conditions, and that as a general rule they are attended with the excretion of albumen (p. 87). It seems to be pretty certain that hyaline casts of the renal tubules are the results of irritation of the epithelia of these tubules, in consequence of which a coagulable material is secreted by these cells, which coalesces into cylinders, corresponding to the shapes of the tubules. (*Aufrecht. Centrabl. f. d. Med. Wissensch.*, 19, 1878; Langhaus, *Virchow's Archiv*, lxxvi. 85, Oedmanson, Rovida, and others.)

To what extent these casts may be evidences of tissue alterations it is impossible to say. It is certainly reasonable to suppose that at least they may be results of transient irritation that may subside without leaving

its vestiges behind in the tissues of the organs. There can be no doubt that patients suffering from acute febrile disease may, during life, pass urine containing both albumen and tube-casts, and yet the kidneys of these persons may reveal nothing abnormal after death. This would simply indicate that the irritation that was sufficient to stimulate the glandular epithelium to the formation of casts, was not violent enough or sufficiently long continued to produce recognizable structural alterations. It must, therefore, be understood, that the influences producing these casts may vary from a slight stimulation of the epithelia of the tubules to extensive and irreparable destruction of renal substance; but it must not be forgotten that while an insignificant and transient irritation may subside without leaving its traces behind it, it is most probable that if it be continued for an indefinite time it may finally produce permanent effects. In the cases I have recorded, the results from the irritation of the iodide were, as observed, at most slight albuminuria and pale granular tube-casts. Nor was there noticed, in any of them, systemic evidences of renal disturbance. Certainly in no case was there the slightest reason to suspect, as produced by the iodide, an extensive parenchymatous inflammation, such as it has been claimed the iodide is capable of exciting. The effects were such as iodine and the iodides may occasion in mucous membranes generally, a catarrh, in fact. Beyond this it did not proceed, but, on the other hand, there seemed rather to be a tendency towards a subsidence of the irritation and a toleration of the drug. At least, there seemed to be no increase in the symptoms under its use, and in one case especially, that of K. G. (Case 4), the renal affection that had been quite pronounced, gradually and completely disappeared under the full and systematic use of the iodide. It is not impossible, however, that in this instance the results were due to the specific action of the drug upon a purely syphilitic renal disorder.

At the same time, I cannot avoid the conclusion that while the evil effects of the iodide of potassium upon the kidneys are small and for the most part transitory, the occurrence of more severe alterations is not impossible, nay, is probable. But upon this point my investigations have been too few and imperfect to enable me to speak with confidence. It is perfectly well established that there is no constant tendency on the part of the kidneys to resent the presence of the iodide. My own observations are confirmatory of this, for they include a number of old syphilitics, to whom the drug had been administered for protracted periods, and in excessive doses, without the smallest sign of urinary disorder. As in other parts of the body, the undesirable effects of the ingestion of iodine and the iodides have been attributed to idiosyncrasy, so must idiosyncrasy be invoked to explain any undesirable results of the action of these preparations upon the kidneys.

223 MADISON AVENUE, BALTIMORE.

ARTICLE II.

USE OF THE ÉCRASEUR FOR CURING DEEP-SEATED FISTULA IN ANO. By J. M. F. GASTON, M.D., of Campinas, Brazil.

THE frequency of fistula in ano has its origin in some ill-defined proclivity on the part of the tissues about the rectum to a subacute form of inflammation. A proneness to the development of abscesses in this region may be explained by the turgescence of the abundant supply of blood-vessels connected with a want of proper evacuation.

The rectum being the receptacle of the excrementitious mass resulting from the materials that constitute our food, may be irritated by the long continuance of the indurated feces in the canal. It is also liable to injury by the passage of foreign bodies that have been swallowed, and that have rough or very irregular surfaces which offend the mucous membranes.

A purulent discharge from an inflammation exterior to the walls of the rectum, that finds its way outside of the sphincter ani, is not often attended with serious consequences. The source of trouble that terminates in fistula is generally an abrasion or pustular inflammation involving the lining membrane and the adjacent areolar tissue of the canal, by which the vitiated fluids penetrate the cellular tissue, and permeate the surrounding muscular substance. A tract or channel is thus formed which is destined sooner or later to reach the surface externally at varying distances from the anus. If the origin is near the outlet of the rectum, the point of discharge externally will usually be found immediately outside of the sphincter ani. But if the source of the fistula is high up in the canal, the route of the discharge may be in the direction of the sacrum or through the muscular fibres of the gluteus, and there may be several lines of communication with the surface. A single opening by the ulceration of the mucous membrane of the rectum may cause a fistula that diverges in different channels, and thus permeating all the tissues, finds several outlets at various points over the sacrum or on the buttocks. As a rule, when fistulous tracts are formed superficially over the sacral or gluteal regions, there will exist an ulcerated opening in the lining membrane of the upper part of the rectal canal. But it happens occasionally that we are unable to trace this connection, and perhaps in some cases the internal lesion has cicatrized while the outer fistulous tract continues. In a case that was under my care some time since for fistulous discharges over the sacrum, in a vigorous young Brazilian, I laid open the superficial communicating channels with the knife, and found in one of them a pledget of short hairs of an oblong shape, which had an unmistakable fecal odour. I expected from this to be able to trace a communication with the rectum, but no connection could be discovered, and the crucial fistula that was laid open closed by granulation, and gave no further trouble.

Another serious case of extensive superficial fistula is under my observation at present, and has prompted me to prepare this paper.

CASE I.—There were four extensive tracts over the posterior gluteal region, being two on either side of the sacrum, communicating each with its fellow, but not apparently connected with those of the opposite side. The two on the right side, being on the posterior aspect of the hip, were laid open with the bistoury and grooved director ten days since, while the two on the left hip have remained for another operation when the former shall have made some progress in granulating. In them it has been requisite to draw the gaping skin together by adhesive plaster for the advancement of the healing process, which has been proceeding regularly thus far with dressings of lint and carbolized oil.

In the tracts already laid open no communication was detected with parts more deeply seated, yet it may be that upon making the incision of the fistula over the left buttock the line of communication with the rectum may be found. Upon exploring the rectum indications of former ulceration were discovered high up in the canal, and the posterior wall gives evidence of a cicatrization, with adherence to the promontory of the sacrum. It is hence clear that this was the focus from which the fistulous tracts were extended to the superficial parts of each hip, and it is not improbable that there may still exist a small orifice by which the secretions escape from the rectum, and keep up the irritation along the lines of communication with the external outlet. Although the cicatrization in the upper posterior part of the canal indicates that an orifice existed previously, and has been obliterated, the examination within does not reveal a lesion of the mucous membrane at present, and the final result will enable us to determine the mooted question as to the spontaneous closure of the internal opening of a rectal fistula while the external outlet keeps up a discharge of pus.

This patient is a young negro man, who has done the ordinary service of a slave upon a coffee farm, and has doubtless received nourishing food, but has not had that variety in those plain articles which his condition demanded for alimentation. There exist over the region of the clavicle several patches of ulceration which indicate a scrofulous diathesis, yet they are improving under the influence of cod-liver oil and generous fare so that the restorative process in the incision is going on very favourably, yet the general condition of the subject is not altogether satisfactory for the good result of an operation on a large scale.

The other superficial tracts will be laid open with the knife as those have been; yet should it turn out that some of them have a connection with the canal of the rectum, it may be requisite to separate the deep-seated tissues with the chain of the écraseur, and hence I have introduced a notice of this case as a preliminary to the description of those which have been operated upon by this instrument.

It is not necessary that the écraseur shall be used to perform simple operations that may be suited to the employment of a bistoury and grooved director, or to the use of gradual constriction by the loop of a cord or wire. The fistulæ, which originate immediately within the anus and terminate at a short distance outside of it, may be divided so safely and expeditiously with the knife as not to require the use of an anæsthetic, and should the

patient insist upon lessening the pain of cutting, local anæsthesia will serve the purpose without the risk or delay of inhalation.

The whole subject of fistula in ano affords an interesting field of investigation, and there is much for study in the improvements which have been effected in the mode of treating the various forms of this troublesome affection. But, as I am limited to a notice of one important branch of the subject, this paper does not include those phases of the disorder that are most frequently encountered by the practitioner.

It has happened that a large variety of these fistulous affections about the rectum have come under my observation here within the past ten years, and it has been noted that the cases of gravity are far more frequent in this place than in the Southern United States, where an extensive field of observation afforded few cases in comparison with those I have encountered in Brazil. Some of the cases that form the basis of this paper have occurred in the practice of other physicians with whom I have co-operated in their management, or in the necessary operations, while a considerable number have been under my own care. It is not my purpose to present any statistical record of the different kinds of fistula in ano that have been treated; but, putting aside the more familiar examples of simple cases, such details will be presented as may give a proper conception of the graver varieties that have come under treatment. Not treating of cases in which palliatives are to be used, nor of the more simple operative procedures for the cure of ordinary fistulæ, no reference need be made to those examples, and hence attention is directed only to the class of deep-seated fistulæ which are appropriate for the application of the écraseur.

The principle upon which this instrument acts allows the use of a cord, wire, or chain to constrict and in the end divide the tissues, which are inclosed within the loop. Having employed the jointed chain formerly with satisfactory results in the excision of hemorrhoidal tumours, preference was given to it for dividing the parts that intervened in fistula. When the tract or channel penetrates to such a depth as to cause apprehension of hemorrhage by cutting with the knife, the tissues may be divided without any risk by the chain of the écraseur of Chassaignac. The instrument should be tightened up to the point of dividing the cellular tissue and muscular fibres, and, even when an extensive mass is divided, no bleeding occurs. The chain may pass high up into the canal of the rectum, where there are vessels which would bleed profusely from an incision with the bistoury, and yet no hemorrhage ensues upon their division by the chain of this instrument.

The essential conditions which indicated very clearly this operation have been presented in three cases of extensive fistula in ano, in which there was such correspondence in the history of the individuals as to be types of the uncomplicated rectal disease.

The patients were active, robust, and otherwise healthy persons, so that the affection could not be attributed to any constitutional disease, but was most probably the result of some local injury or ulceration of the mucous membrane of the canal immediately below the contraction of the circular fibres which serves as a division between the sigmoid flexure of the colon and the rectum; or, in other words, near the internal sphincter which ordinarily retains the excrementitious matter within the lower part of the intestine. The internal opening in each case was high up in the rectum, and the fistula extended from this aperture deeply into the surrounding tissues, so that the tracts or channels lead out in one case over the sacrum, and in the other two reached the lateral aspect of the buttocks. The line of communication between the internal orifice and the external outlet of the fistulas, in each of the three cases, exceeded six inches in length.

CASE II. was an athletic, middle-aged man of German descent, but a native of Brazil, who led an active life as manager and part owner of an extensive machinery establishment. CASE III. was an able-bodied negro man, about twenty-five years old, who laboured upon a coffee fayenda. CASE IV. was a robust black woman, of perhaps thirty years of age, whose service had also been in the coffee-field.

With all the antecedents of nourishing food and exercise in the open air, each of these cases developed extensive fistulæ without any material impairment of their general health, and afforded most favourable conditions for an operation involving the deep-seated tissues.

It may be stated in advance that in all these extensive divisions of the muscular fibres the subcutaneous injection of morphia, with the inhalation of chloroform, has been resorted to previous to operating, and a full dose of sulphate of quinia has been given subsequently, thus preventing the suffering and consequent shock to the general system of the patient.

In Case II. the fistulous openings were connected by channels that crossed immediately over the upper middle part of the sacrum, and when these were laid open the incisions presented two lines of 4 x 6 inches at right angles in their middle point so as to form a cross. This division was effected with the bistoury and grooved director, extending to every depression that could be reached, and yet without discovering any aperture by which to trace a communication with the lesion that had been found in the rectum. This difficulty caused a postponement of the final operation until the close observation daily of the fistulous surface now exposed to view revealed the exact site of the orifice.

It may not appear impertinent to remark that all fistulous channels over the region of the sacrum and ischia, even when they appear to be superficial, should be suspected to have their origin in the rectum, and are to be explored with great care to locate the point of entrance. The opening may exist in any part of the superficial tract, and after the fistulous channel is opened it may prove impracticable to pass a probe into the orifice, though there may exist a lesion high up in the rectum, which indicates that a communication should be found. A little patient watching, as in this case, will generally be rewarded with success.

Having determined with accuracy the orifice of the fistula and the line of its communication with the upper part of the rectum, the chain of the écraseur was secured to an elastic bougie and thus drawn into the tract of the fistula, passing out of the rectum through the anus. This extremity

of the chain being joined with the other, which remained outside of the orifice on the right side of the sacrum, they were both attached to the instrument. Thus it will be seen that all the tissues contained in the great sacro-ischiatic notch were included in the loop of the chain attached to the écraseur. It was cautiously and gradually tightened until every portion of the substance, in which the sphincter ani entered, was entirely divided, and without any hemorrhage. Such a chasm has not perhaps been made previously into the canal of the rectum as was caused by the passage of the chain of the instrument through the large mass of the cellular and muscular tissues adjacent to the sacrum and the coccyx on the posterior aspect of the right buttock. This immense wound was filled up with fine strips of old linen (which I prefer to lint in these cases), previously saturated with carbolic oil, and the dressings were daily renewed to the great discomfort of the patient, as there was such an extensive raw surface exposed. At the end of one month very considerable progress had been made toward the restoration of the divided parts, and within three months all was completely healed. The only trouble that remained was some lack of retentive power on the part of the sphincter ani, which was so far relieved at the end of twelve months that only when there were fluid evacuations was any difficulty experienced. Five years have elapsed since this operation, and the gentleman has been actively employed since the close of the first year without further inconvenience locally or generally.

CASE III. presented quite a number of fistulous openings over the posterior aspect of the buttocks, and it was at first suspected by another physician who examined the case that they resulted from brutal chastisement of the slave, though there was no allegation to this effect. But upon examining the rectum the origin of the trouble was detected in the upper part of this canal, and the tracts extended from this in different directions to the surfaces over the sacrum and the ischia, involving the right and left buttocks. It was ascertained that the smaller superficial channel of some three inches in length could be divided safely with the bistoury and the grooved director that was passed on the posterior part of the left buttock. The other two extensive tracts involved tissues that would have caused bleeding if the division had been with a knife, and hence it was most expedient to use the écraseur. The chains of two instruments were passed through the respective channels and out at the rectum, in the manner described for the previous operation, and the division of both was effected at the same time without any loss of blood.

In Case II. the large gaping wound, resulting from such an extensive solution of continuity, presented something considerable for the healing process. But in this second operation there were two incisions quite as deep, and one of them of greater length; while the third made with the knife, though less, would have been important but for the immensity of the others. There were two superficial fistulous tracts, communicating laterally with the main channels, which were left for treatment by the use of injections, and they were cured while the dressings were applied to the grand chasms with strips of linen and the carbolic oil.

In this operation the rectum, including the sphincter ani, was laid open to within a half inch of the ring of circular fibre that divides this canal from the colon and implicated all the sacro-ischiatic spaces, which corresponded very much to the second case. But independently of this there was a far more extensive division of the soft parts, making with the former something less than a right angle outwardly in the huge mass of the right

buttock. This last was divided much after the manner that a butcher would proceed in getting out a rump steak.

Even to the professional eye it was a hideous sight, and there seemed scarcely a hope for the restoration of this vast destruction of substance; yet the curative powers of Nature asserted themselves in a most satisfactory manner, and in less than twelve months this negro returned to his ordinary work on the plantation entirely well, having complete control over the sphincter ani. He was operated upon three years ago, and for the past two years has not required any professional attention.

CASE IV. had two deep fistulæ, whose external outlets were nearly equidistant from the junction of the sacrum and coccyx on either side, having each a communication with an opening about midway up the rectum. The channels being tortuous could not be traversed by a metallic probe or director, yet they were explored by a flexible bougie, to which the chain of the écraseur was attached, and thus loops were thrown round the intervening parts. Two instruments were used so as to encircle the tissues on either side and divide them at the same time. As the chains included a portion of the buttock that contained no vessels that could yield any considerable amount of blood, the tightening of the screw in the one and the working of the handle in the other instrument were done rather too fast, and, as a consequence, there was some sanguineous oozing from the divided surfaces of the muscles. This, however, ceased upon the application of a strong aqueous solution of phenic acid, which has proved in my hands an effective hemostatic, even when small arterial twigs are divided by the knife.

The usual dressing of fine strips of old linen saturated with carbolized oil was kept up for some weeks, and the cure was completed within two months, so that the negress went about her duties on the farm.

The most remarkable feature in connection with these extensive divisions of the deep-seated fistulas, involving the cellular tissue and the muscular fibre surrounding the rectum, is the comparatively slight effect produced upon the general system. There has been very little febrile excitement after any of these heroic operations, and the restorative process has also progressed very satisfactorily in all three cases.

Trusting that my record of these operations may induce others to present their experience in the management of deep-seated rectal fistulæ, I have great confidence in recommending the écraseur to the favourable consideration of my colleagues when they have to deal with these grave cases. The advantages of this simple instrument are so evident as only to require a knowledge of the immediate and final good results of its application in such operations, that it may be appreciated by surgeons generally.

I make no reference to the hopeless cases that have come under my observation for which no remedial step was undertaken because of the general prostration, and not from any apprehension of the consequences of arresting the fistulous discharge. I will be excused by those who are most experienced in the treatment of these disorders of the rectum for not adopting the idea of former times, that the drain thus induced upon the adjacent parts has a salutary influence upon tubercular disease of the

lungs or upon chronic affections of the liver. The evidence is conclusive to my mind that the general debility and constitutional irritability resulting from the constant wear and tear of fistulas involving the tissues surrounding the anus, are in most cases aggravating circumstances in the progress of other diseases, and the sooner and the more effectually they can be cured the better for all the disorders of the animal organization. Being advised of the position taken by Brodie, Astley Cooper, Theophilus Thompson, Druitt, Chelius, and others, in opposition to the radical cure of fistula in ano which occurs in the course of organic disease of the lungs or liver, I cannot acquiesce in the view of these high authorities and set aside the experience of other observers equally entitled to consideration. It may be held that distinguished names of our day are marshalled against operating under such conditions, and amongst them stands out bold and prominent that of the sagacious Dr. Gross.

"All attempts," he says, "at a radical cure are, of course, inadmissible when there is serious organic lesion in other parts of the body, especially the lungs. To avert the local irritation would, in such an event, prove highly detrimental by expediting the fatal crisis. Palliation alone, not cure, is sought; or cure, slow and chronic, occupying months instead of weeks, in its accomplishment."

This *ipse dixit*, coming as it does *ex cathedrâ*, must be weighed with facts. However great may be our respect for the professional opinion of such an erudite author, it is evident that holding this view in regard to therapeutic indications in this pathological state of the system, he could not, from the nature of the case, be supposed to have put the matter to a practical test. It must be inferred that he has based his statement upon a preconceived impression derived from those who have heretofore given judgment in a case of fistula in ano that is connected with some other organic disease unfavourable to any operative procedure that looks to a radical cure. It is thus at best but negative testimony, which may be set aside by positive results.

The "chronic cure," which is recommended in the event of using any remedial measure, so as to spare the physical strength of the patient, reminds one of lessening the shock to the dog by taking off his tail by piecemeal, an inch at a time, instead of removing it all at one stroke of the knife.

Thus the slow treatment suggested for the fistula in ano of the subject of hepatic or pulmonary disease must operate upon the delicate organization of the tissues about the rectum, making the oft-repeated impressions of these temporizing applications, instead of the speedy and efficacious effect of a single and well-directed operation in cutting short the entire train of disorders.

No one would expect any advantage from resorting to a surgical operation for fistula in ano when it occurs under circumstances that indicate a speedy fatal termination of some other disease, because the utter hopeless-

ness of the cure of the grave affection with which it is associated leaves no chance of benefiting the patient. But this consideration differs widely from the indisposition to cure the fistula from the impression of its proving hurtful to the subject of a disease less serious in its character.

It is not by any means satisfactorily shown that any pulmonary or other organic disease becomes aggravated by the cure of fistula in ano, and independent of my own results indicating the relief afforded by a timely resort to an operation under such circumstances, I am endorsed by the authority of Erichsen, who, thirty years since, wrote as follows: "I have, however, in several cases found considerable advantage result by operating for fistula in the early stages of phthisis, or in suspected cases of that disease, the patient's health having considerably improved after the healing of the fistula."

The continuance of such a drain is not proven to be any advantage or its discontinuation shown to be productive of evil, and moreover the change is never brought about suddenly, as the suppuration from the incised surfaces diminishes gradually until the granulation completes the cure. Hence we should not be deterred by this supposed metastasis from the suppression of a customary discharge.

Addendum. April 22, 1881.—The incisions made in Case I. for fistulæ on the right of the sacrum having made favourable progress, the fistulous canals on the left hip were laid open to-day by Dr. Melchert with the co-operation of Dr. Lima, in whose infirmary the negro is under treatment.

One of the canals, being eight inches in length and extending from the lower part of the sacro-iliac junction directly across the external iliac muscle, was laid open with a free incision of the knife passed on the director. Two short tracts were opened likewise immediately over the sacrum. Upon exploring downwards from the principal incision, a fistula was discovered in the direction of the sacro-coccygeal articulation, and was laid open with the director and bistoury down to the outer boundary of the upper part of the rectum. As we could not trace the opening into the canal, and the extensive incisions already made must tax the recuperative powers, it was determined as best to await further observation as to the connection of the fistula with the rectum. When the incisions made formerly and these shall have healed, it will most likely appear that the tract communicating with the canal of the rectum still remains open, and the line of connection can be traced with more certainty. Should this orifice exist, as I am convinced it does, in the mucous membrane, the operation with the écraseur will yet be in demand, as the tissues to be divided will not admit the application of the knife. With a view to promote the granulation, lint well soaked in carbolized oil is placed in the channels of the fistulæ that were laid open, and this dressing will be continued from day to day until the approaching cicatrization admits adhesive plaster.

ARTICLE III.

THE OPERATIVE TREATMENT OF PROLAPSE OF THE VAGINA AND UTERUS.

By A. F. HOUSE, M.D., of Cleveland, Ohio.

THE object of this paper is to present in a concise form the operative treatment of prolapse of the vagina and uterus with special reference to three different methods which have in late years come before and have been indorsed by the profession, namely, Simon's,[1] Hegar and Kaltenbach's,[2] and Bischoff's.[3]

The great majority of physicians still cling to the old method of treating these conditions with pessaries.

Among the prominent symptoms associated with prolapse of the vagina and uterus, pain in the back and loins, a constant feeling of impending loss of something from the external genital organs, painful and disturbed micturition, a disordered condition of the bowels, and nervousness varying from slight irritation to well-defined hysteria, may be mentioned. In view of the great number of women so afflicted, and the attention these conditions must necessarily have received from observing physicians in all ages of the world, is it not almost astounding to think that the first attempt at operative treatment of which we have record was made in the 19th century? Surgical treatment having been suggested, a brisk contest ensued between different operators as to the relative merits of the treatment they respectively advocated, until finally at this date operative procedure has been brought to such a state of perfection that Hegar and Kaltenbach can with justice say that kolpo-perineorraphy, in the surety and completeness of its results, stands equal in importance to any gynæcological operation, with perhaps the single exception of vesico-vaginal fistula.

In none of the systematic works on gynæcology accessible, has an attempt been made to present the various operations devised with an analysis of the results attending them, while in the majority of cases each author mentions only the single method he may have originated or adopted. As an established usage is not always applicable to an individual case, it happens that the profession often attempts what has been already tried and discarded, for want of that information our leading lights should have placed within its reach. A brief *résumé* of some of the efforts and the progress made in this direction is therefore profitable.

The site of every operation for prolapse of the vagina and uterus has been respectively—1. The vulva. 2. The introitus, or entrance to vagina proper. 3. The vulva and perineum. 4. The vagina. 5. The perineum, vulva, introitus, and vagina proper, strengthening the whole septum-recto-vaginalis (Kolpo-perineorraphy).

[1] Prager Vierteljahrschrift, 1867. [2] Die Operativ Gynæcologie, Erlangen, 1874.
[3] Die Kolpoperrioplastik nach Bischoff von Dr. Banja. Basel, 1875.

The operation proposed and executed by P. C. Huguier,[1] of which mention will be hereafter more particularly made, rests upon an entirely different principle from the foregoing operations.

Gérardin in 1823 was the first who attempted to cure prolapse by operative means. His method comprised simply cauterization of the vaginal walls. During the year 1830, Mende proposed the operation of hymenorraphy, consisting, as its name implies, of an artificial hymen, but did not carry it out. Not much later Fricke attempted episiorraphy, by freshening the lower third of both labiæ majoræ and the posterior commissure and uniting them with the quilled suture. The result was somewhat unsatisfactory. Malgaigne freshened deep into the introitus, as did also in about the same way Baker Brown, Crédé, Dieffenbach, Kiwisch, Küchler,[2] Linhardt, and Scanzoni. Heyfelder, Dammes, and Schiffer followed with a poor modification of episiorraphy, by drawing one or more rings through both labiæ. We have next a series of operations, the so-called kolpodesmorraphy, performed with a view of narrowing the vagina, and thus retaining the prolapsed parts *in sitû*. These operations consisted in excising a number of folds of vaginal mucous membrane and at the same time inducing adhesions to neighbouring parts. Gérardin, aforementioned, was the first to propose this principle.

Benj. Philips cauterized the vaginal walls with fuming nitric acid, and thereby obtained favourable cicatricial contractions; while Dieffenbach, Henning, Kennedy, and Velpeau drew the actual cautery over the vaginal mucous membrane in lines lying in the direction of its long axis, and Colles and Simon caused a ring-formed eschar at or near the cervical insertion. The "pincement du vagin" of Desgranges, although soon abandoned and forgotten, consisted in applying strong serre-fines to longitudinal folds of vaginal mucous membrane, then reapplying them to fresh folds, for months afterwards. He used chloride of zinc in his later operations. What would the modern physician say to Chipendale's proposition to inoculate the vaginal mucous membrane with gonorrhœal virus in the hope of obtaining cicatricial contraction similar to that of stricture of the male urethra? Bellini and Blosius performed kolpodesmorraphy by applying ligatures to portions of the vaginal mucous membrane until they sloughed off. More recently the elastic ligature has been frequently employed for the same purpose. Folds of mucous membrane of various lengths are raised with two pairs of toothed forceps, and a number of Karlsbader needles or hare-lip pins are passed through the base of these folds, and beneath the needles or pins a piece of rubber tubing is tightly applied and allowed to remain until the fold sloughs off, which usually occurs between the 8th and 11th days. As other than mucous membrane is often included in these folds, as the parts are slow to heal, as the disagreeable

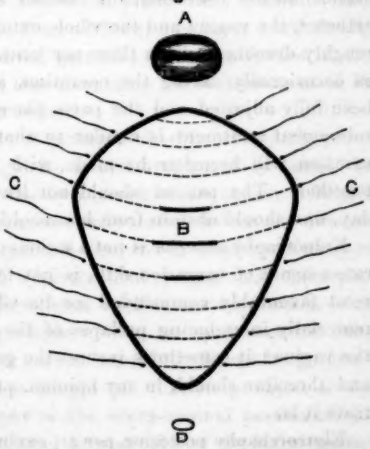
[1] Mémoire sur les Allongements hypertrophique du col de l'Uterus, etc. Paris, 1860.
[2] Die Doppelnath zur Damm-schamscheidennath, u. s. w. Erlangen, 1863.

fetid discharge is decidedly unpleasant to the patient, and as the operation does not secure a firm and durable cicatrix, its results have been unsatisfactory. This operation can be performed perhaps with favourable results where the prolapse of the anterior vaginal wall is but slight, or where there are folds of hypertrophied mucous membrane.

To Marshall Hall the credit is due of having first performed elytrorrhaphy. He excised an elliptical piece of mucous membrane from the anterior vaginal wall and united the edges of the wound with the quilled suture. A number of other operators removed elliptical or oval pieces from the lateral vaginal walls. More recently Simon connected this method with epesio-elytrorrhaphy. Marion Sims revived and revised this operation with a modification of his own in 1858. Through him we were made acquainted with a good vaginal suture. Where the prolapse is slight, and the patient can shun herself, a favourable result may be obtained. The so-called "median" operation of Spiegelberg[1] is a very peculiar one. By it the middle of the lower portion of the anterior vaginal wall is suspended to the middle of the upper portion of the posterior one. But the operation of kolporraphy anterior of Hegar and Kaltenbach answers all expectations, and consists in removing an elliptical portion from the anterior vaginal wall (Fig. 1). The upper angle is made as blunt as possible for the purpose of increasing the breadth of the wound lying nearest the portio vaginalis to the fullest extent consistent with the parts. The simple lithotomy position is the best for the patient. As the operation is scarcely ever accompanied with severe pain, it is quite unnecessary to use anæsthetics. In 33 cases Rokitansky has had no occasion to use chloroform.

In operating, Hegar and Kaltenbach direct that the vaginal membrane be seized with a double tenaculum about one-third to one-half inch from the anterior lip of the cervix, as near the median line as possible; another tenaculum attacks the membrane from one-third to three-quarters of an inch from the orificia urethræ externa within the vagina, and two more tenacula are applied opposite each other at the lateral margin of the vaginal surface about to be

Fig. 1.



A. Os uteri. B. Flap on anterior vaginal wall excised. C. Sutures. D. Os urethræ externa.

[1] Zur Entstehung und Behandlung des Vorfalls der Scheide und Gebärmutter. Berliner Klinische Wochenschrift, 1873.

freshened. Slight traction being now made upon each tenaculum in opposite directions, a smooth field for operation is exposed corresponding to the size of the mucous membrane it is desired to excise. Its amount depends entirely upon the extent of the prolapse and the excess of tissue in the vaginal wall. In order to determine this amount, a fold of membrane may be picked up by tenaculæ on each side of the median line and approximated, thus making apparent the condition of the vagina after the operation. It is sometimes taught that the prolapsed parts should be placed *in sitû* before freshening, but as this merely complicates and renders the operation tedious without corresponding benefit, it is entirely unnecessary. The boundary of the part to be freshened should be marked out with a sharp scalpel, whereupon the mucous membrane, at its lowest angle, should be seized with a pair of toothed forceps, and dissection commenced with a sharp scalpel, applied first to one, then to the other side. To be ambidextrous is of great advantage. The removal of the mucous membrane is generally accomplished with but little trouble, care being taken that all ragged and uneven edges be smoothly trimmed with forceps and scissors. Severe hemorrhage, and a soft friable and relaxed condition of the vaginal membrane with cicatricial eschars may complicate the operation. Hemorrhage is, however, usually easily controlled by the application of an ice-cold sponge, torsion of the bleeding vessels, and finally closure of the wound. Hegar and Kaltenbach unite by insertions deep into the tissues and use silk sutures. These are removed in from ten to fifteen days, and it is well not to be in too great haste. Before operating, the bladder should be entirely emptied by the catheter, the vagina and the whole external genital organs should be thoroughly drenched with a three per cent. solution of carbolic acid, as well as occasionally during the operation, and again when the sutures have been fully adjusted and the parts placed *in sitû*. The preliminary and subsequent treatment is similar to that of kolpoperineorraphy, of which mention will hereafter be made, with the exception of tying the knees together. The patient should not leave her bed before the fourteenth day, and should abstain from household duties for a still longer time.

Kolporraphy anterior is not a serious operation. It requires but a moderate amount of operative skill, is not followed by evil results, but can be most favourably commended for its effects upon cystocele; it aids very materially in reducing prolapse of the uterus with complete prolapse of the vagina; it sometimes insures the good results of kolpoperineorraphy, and therefore should, in my opinion, precede all operations whose helpmate it is.

Elytrorrhaphy posterior, *per se*, excludes freshening of the introitus and vulva, is applicable to those cases where there are great relaxation and folding of the posterior vaginal wall, and can properly only be regarded as an adjunct of kolpoperineorraphy. Whether the mucous membrane to

be excised lies in the upper or lower part of the posterior vaginal wall, it has still mostly an elliptical form, and is united by suture. The field and method of operation are so similar and so closely allied to operations to be discussed hereafter that it is unnecessary to give details now.

Before considering the respective operations of Simon, Hegar and Kaltenbach, and Bischoff, for the cure of prolapse of the vagina and uterus, attention is drawn to Huguier's treatment of these conditions. This French gynæcologist says in his work, page 49, that the disease described by authors under the name of Prolapsus is, in the large majority of cases, nothing more nor less than an elongated hypertrophy of the supra-vaginal portion of the cervix uteri, and he considers this elongation not as a consequence, but as an actual cause of the prolapse. Consequently, he proposes to cure prolapse by the amputation of the supra-vaginal portion of the cervix. Spiegelberg, in objecting to this idea of causation, maintains that the elongation is secondary in a majority of cases, being induced by the dragging of the vagina and bladder upon the uterus whose tissues, as well as those of its immediate appendages, are in a relaxed, ductile, and weakened condition. Position and constant downward traction he assumes to be causes, not effects. According to personal observations, I must believe this hypertrophied elongation of the supra-vaginal cervix to be secondary. Several times cases have come under my care exhibiting but slight prolapse of the vaginal walls and the normal position of the uterus, yet whose cavities at first measurement indicated a length of from two and one-half to three inches. In the course of time the prolapse of the vaginal walls progressed more and more until it became complete, while simultaneously the os uteri externum continued to descend lower and lower until finally it protruded far beyond the external genitals, while the fundus of the uterus retained its normal height, thus increasing the measurement of its cavity variously from five to seven inches.

Nevertheless, there may be cases of prolapse wherein an hypertrophied elongation of the portio supra-vaginalis is primary, but they cannot be distinguished from those in which the hypertrophy is secondary. Where hypertrophy is the primary cause, a cure may under favourable circumstances be reached by Huguier's method; but, in the majority of cases of prolapse of vagina and uterus with hypertrophied elongation of the supra-vaginal cervix, a cure can never be induced by Huguier's operation.

In a large number of cases of prolapse we find an hypertrophied state of the infra-vaginal portion of the cervix, named by Spiegelberg, circular hypertrophy. Observation has taught me that in prolapse of the uterus and vagina with hypertrophy of the supra-vaginal portion of the cervix, either with or without conjoined hypertrophy of the infra-vaginal portion, amputation after Huguier's method, or simply amputation of the infra-vaginal portion as practised by many of his followers, is entirely useless and without favourable result. Ample opportunity was afforded

me by Rokitansky at the Maria Theresa Woman's Hospital at Vienna of watching the course and results of a simple replacement of the prolapsed parts without amputation, care being taken to retain the same *in situ*, and to enjoin absolute rest on the patient. By this means uterine cavities measuring five and seven inches were reduced to two and three-fourths, and three and one-half inches respectively, thus clearly proving the rapid diminution of the hypertrophied parts by mere replacement and rest. Rokitansky possesses a very instructive preparation by way of demonstration of this fact. Upon receiving a patient into the hospital on the 13th July, it was found that her uterine cavity measured seven inches. On the next day he performed kolporraphy anterior; on the 27th July, the patient died of cerebral apoplexy. At the post-mortem the uterine cavity measured but four inches, thus showing a reduction of three inches in thirteen days.

In my practice I pay no attention to simple hypertrophy of the cervix uteri, but perform the operation of kolporraphy anterior. The time the patient is obliged to remain abed is usually sufficient to reduce the elongated and hypertrophied uterus to quite its normal size. From its rapid decline in size under such circumstances it is fair to assume that its enlarged condition is partially due to œdema. It should be understood, however, that amputation of the prolapsed cervix is the only cure in cases of hypertrophied elongation of the infra-vaginal portion of the cervix without vaginal prolapse.

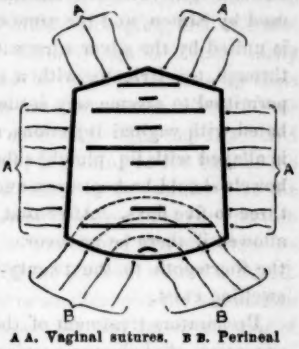
The operations to which special attention is hereby drawn, those of kolporraphy posterior of Simon, kolpoperineorraphy or perineauxesis of Hegar and Kaltenbach, and perineoplasty of Bischoff, seek to permanently narrow the vagina, change its axis forward and upward, and strengthen the recto-vaginal septum. Some description of the details of these operations is necessary in order to clearly apprehend their differences and relative merits.

In Simon's operation of kolporraphy posterior, the patient is placed upon her back with her thighs flexed upon her abdomen. Simon's speculum, a modification of Sims', is then introduced for the purpose of raising the anterior wall of the vagina; two of Simon's flat specula are applied to the labia and the lateral walls of the vagina. Thus the field of operation is fairly presented to view. Along the boundary of the true skin and the mucous membrane of the vulva an incision is made varying from two to two and one-half inches in length (Fig. 2). Upon the line of this incision as a base, a pentagonal figure is constructed, whose sides vary from two to two and one-half inches, and whose apex lies in the medium line of the posterior wall of the vagina. This can be more perfectly represented by a diagram.

The mucous membrane covered by this figure is then excised, and the wounded surface coaptated by using alternately the deep and superficial silk sutures. In order to properly conduct this operation the operator should

have five assistants, three of whom should be acquainted with the operation. The armamentarium consists of, 1, Sims' or Simon's specula of different sizes; 2, two of Simon's lateral specula; 3, a number of scalpels; 4, a curved scissors; 5, two pairs of toothed forceps; 6, Jobert's or Bozeman's needle-holder and catcher; 7, a number of single and double-hooked tenacula; 8, Chinese raw silk for sutures; 9, an Esmarch's irrigator; 10, sponges; and 11, a number of long and short needles. Under favourable circumstances the duration of the operation varies from one to three hours. In the after-treatment a soluble condition of the bowels should be maintained, and the catheter be resorted to when the patient fails to pass water spontaneously. The perineal sutures should be removed on the fourth, and the vaginal sutures about the ninth to the eleventh day.

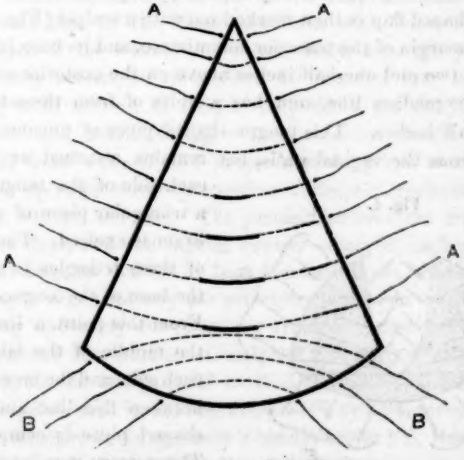
Fig. 2.



A A. Vaginal sutures. B B. Perineal sutures.

When performing kolpoperineorraphy or perineauxesis, Hegar and Kaltenbach place their patient in a lithotomy position. They excise a triangular piece of membrane from the posterior vaginal wall (Fig. 3). Its apex forms

Fig. 3.



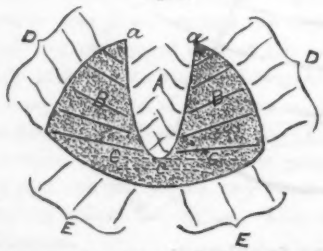
A A. Vaginal sutures. B B. Perineal sutures.

an acute angle at a point from one-half to one inch from the portio vaginalis. The portion excised extends to and runs in a curve along the posterior

commissure. The instruments required are practically the same as those used by Simon, and the time of operation about the same. The wound is united by the silver wire suture, and the vagina is thoroughly douched through the irrigator with a solution of chlorine water. The patient is permitted to assume any recumbent position. Fetid discharges are combated with vaginal injections, and the smarting or burning of the wound is allayed with liq. plumbi subacet. in solution or cold compresses. The bowels should be kept open and the perineal sutures should be removed in three to five days. After that time a generous, nourishing diet should be allowed if there be no fever. The vaginal sutures are not removed until the fourteenth to the twenty-first day, and not even then if tension and swelling exist.

Preparatory treatment of the patient is necessary before attempting the operation of kolpoperineoplasty of Bischoff. The uterus should be replaced; leucorrhœa, erosions of the cervix, and all inflammatory symptoms should receive careful attention. The bowels should be properly evacuated by enemata, and the operation performed a few days after the cessation of the menses. The patient likewise, in this operation, takes position as in ordinary lithotomy. Four assistants are sufficient. A pair of scissors curved on the flat, a vulsella, several flat specula, with the instruments, etc., mentioned in connection with Simon's operation, complete the outfit. The anterior vaginal wall is elevated by a flat speculum, while two assistants separate the labia on each side respectively by pressure with three fingers, thus fully exposing the posterior wall of the vagina. A tongue-shaped flap is then marked out with a scalpel (Fig. 4). Its apex lies at the margin of the posterior commissure, and its base is from one and one-half to two and one-half inches above on the posterior vaginal wall; it lies over the median line, and has a width of from three-fourths to one and one-half inches. This tongue-shaped piece of mucous membrane is dissected from the vaginal walls, but remains attached at its base. On each side of the tongue-shaped flap a triangular piece of mucous membrane is excised. The apex of each of these triangles is at the side of the base of the tongue-shaped piece. From this point a line is drawn to the middle of the labia majora on each side, and the mucous membrane between this line and the tongue-shaped piece is completely excised The mucous membrane lying external to the introitus between the perineum and the points on the

Fig. 4.



A tongue-shaped flap. a a. Base of same. B B. Triangular pieces. C C C. U-formed perineal pieces. D D. Vaginal sutures. E E. Perineal sutures.

labia majora to which the mucous membrane of the vagina has been denuded is U-shaped, though with horns widely diverging, and this also is denuded to the edge of the true skin. Hemorrhage is usually easily controlled by torsion and ice. Care should be taken to remove all islets of mucous membrane and to leave a smooth denuded surface. The success of union by first intention depends largely upon this. The flap is secured to its new attachment by interrupted sutures, beginning at the base of the flap and so applied as to bring the apex of the flap in contact with the lateral margin of the denuded part bordering the flap. Slight traction with forceps or vulsella upon the edges of the wound will facilitate its coaptation. After the flap has been adjusted the perineal wound is closed. It is apparent that as the flap is made larger or smaller, and the denudation of the vaginal outlet is increased or decreased, we can break the axis of the vagina at a point more or less distant from the introitus, and simultaneously reconstruct the vagina and perineum. The operator should recollect that the efficiency of the operation depends not merely upon narrowing the vagina, but upon changing the direction of its axis. Hence the necessity of a long and thick perineum.

The after-treatment is simple. A tampon dipped in carbolized oil or water is inserted into the vagina, and the perineal wound covered with a cloth saturated with the same solution. A cotton tampon is laid over this and fastened with a T bandage, for the purpose of exerting slight pressure and preventing the filling of the wound with blood. After twenty-four hours this bandage as well as the tampon should be removed, and the patient kept in the dorsal decubitus with knees slightly bent. It matters little if the bowels are moved daily, although perhaps it is better that they should be constipated for the first four or five days. Subsequently mild salines, to induce daily stools, are useful. The diet should be mild and unstimulating. Due attention should be given to this, as to all fresh wounds, and proper rest be given to the wounded parts. If the operator carefully observes antiseptic treatment, union by first intention will be the rule. The perineal sutures are removed after about fourteen days, and the vaginal sutures some days after this. The patient should keep her bed for at least fourteen days after the operation.

In applying in a general way the principles laid down by these authors to cases falling under my direction, my armamentarium consists of: 1, a double tenaculum; 2, a number of scalpels; 3, a pair of scissors curved on the flat; 4, one or two pairs of toothed forceps; 5, a pair of forceps smooth at the point, used in holding knots while tying sutures; 6, a number of artery forceps; 7, Langenbeck's needle-holder; 8, Bozeman's needle-holder and catcher; 9, Sims', Emmet's, and surgeons' needles; 10, surgeons' silk, No. 2 for vaginal, and No. 3 for perineal sutures; 11, carbolized catgut for ligating bleeding vessels; 12, sponges; 13, a 6 oz. hard-rubber syringe; 14, a flat speculum for elevating the anterior wall of the

vagina; 15, two wooden specula for the labia and lateral walls of the vagina; and 16, one or two tenacula, and ice-water for sponges. Two good assistants, or at least two intelligent women, are indispensable as aids, while three or four add very materially to the ease of the operator. The instruments are arranged in order upon a stand, within easy reach while operating.

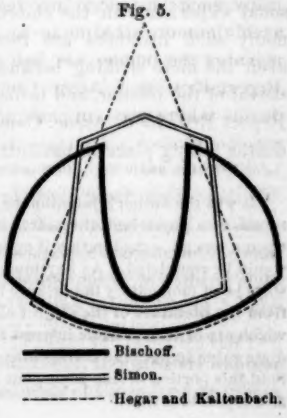
When time and convenience permit, my patient is directed to use warm sitz-baths for some days previous to the operation, to keep her bed, and to live upon light, easily digestible food. If the vaginal walls are firm, a 2 per cent. solution of carbolic acid in glycerine, soaked into a cotton tampon and changed every twelve hours for a few days, is inserted into the vagina. The day before operating, a mild saline laxative is given, and a few hours before an enema, in order to clear the rectum of any remaining fecal matter. The patient is placed in the lithotomy position, with the nates well over the edge of the operating table, so that the vulva is easily accessible. As denudation of the introitus and perineum is painful, full anæsthesia is necessary by any method. Before operating, the perineum and vulva should be shaved at least to the height of the middle of the labia majora, the bladder catheterized and emptied completely of its urine, and the external genitals should be well cleansed with a 3 per cent. solution of carbolized water. The patient should lie upon her back, care being taken that the pelvis inclines neither to the one nor the other side, lest an asymmetrical wound result. To secure perfect coaptation the labia majora should be brought together, and at the point where denudation shall commence a slight incision be made. This will mark clearly the prolongation of the vaginal freshening, and will insure a perfect perineum. The vaginal wall is better presented by having an assistant pass one or even two fingers into the rectum, and, by pressure on the anterior rectal, causing the posterior vaginal wall to bulge forward. Placing it thus gently upon the stretch, the field becomes smooth, and excision of the mucous membrane much less tedious. In one of my cases it became necessary to remove a flap measuring four and a half inches in length, with a base of three and one-half inches. To change sufficiently the axis of the vagina, and to render the necessary support to insure against subsequent malposition of the uterus, a broad and thick perineum became essential, so that the labia majora was denuded and united by suture to one-half its height. The restored perineum measured two and a quarter inches.

Of the three operations herein specially discussed, that of Hegar and Kaltenbach is probably easiest; then follows Simon's; while Bischoff's is the most difficult, and requires the most patience, skill, and attention to details, indeed some ingenuity in dissecting off the tongue-shaped flap, which should not only consist of mucous membrane, but also of submucous tissue. While dissecting, it is well to douche the parts frequently with a 3 per cent. solution of carbolized water, as again before introducing this

suture, when the whole wound should be thoroughly cleansed. I have always used silk for the vaginal sutures. After closing the wound, superficial sutures are introduced when the margins of the wound do not meet perfectly, and the parts are again douched with carbolized water. Both silk and silver wire have been used for the perineum with equally good results in my experience. After the kolpoperineoplasty of Bischoff, a tampon, saturated with a 2 per cent. solution of carbolized water is introduced into the vagina. As I have tied the knees together for five or six days, and the patient has been required to keep the dorsal decubitus as well, it has seemed unnecessary to apply the T bandage to hold the tampon to the perineal wound. The catheter is rarely necessary, and should only be used when the patient cannot micturate spontaneously. If there has been no stool for the first four days, it is induced by enema. Vaginal injections of a 2 per cent. solution of carbolized water are daily used. The diet for the first five or six days consists of light soups, gradually yielding to the usual nourishment of a healthy subject. The perineal sutures are removed on the fourth or fifth day, but the vaginal not before the fourteenth to the twenty-first day. The patient should not leave her bed for at least twenty-one days, and should abstain from hard labour for several weeks more. There is usually little or no febrile reaction, and the smarting and burning of the wound can be allayed by cold applications. The operation should be performed after menstruation, and not sooner than eight or ten weeks after confinement.

Which of these methods, it may be asked, causes the greatest lesion? Which the least? Which affords the best chance of union by first intention? Which from every point of view is attended with the most favourable results? It may be briefly answered that the guarantee of a good result is determined by a strong recto-vaginal septum, based upon a perineum which has been lengthened and thickened, and thus changes the axis of the vagina in its lower half forward. Narrowing the vagina, *per se*, has no lasting result, though it diminishes its calibre to the smallest size consistent with the parts operated upon. In Bischoff's operation the greatest change is effected in the vaginal axis, and the vagina is decidedly narrowed, as shown in the accompanying diagram (Fig. 5); therefore we may reasonably expect from it the most happy results. It is, however, a somewhat complicated operation, and should only be attempted by one who is specially skilled in plastic operations, and particularly those of the female genital organs.

Fig. 5.



Where large cicatricial contractions of the perineum and vagina exist, it may be impossible to form a tongue-shaped flap, while in extreme relaxation of the posterior wall it becomes necessary to substitute this operation by one of the two others. Simon, whose operation is much simpler, has cured the majority of his cases. Hegar and Kaltenbach have met with excellent results; and this operation narrows the vagina, changes its axis, and creates a strong and thick recto-vaginal septum.

ARTICLE IV.

ARE ALL ANÆSTHETICS DANGEROUS WHICH CONTAIN CHLORINE, BROMINE, OR IODINE?[1]

By EDWARD T. REICHERT, M.D., of Newark, N. J., formerly Demonstrator of Experimental Therapeutics and Instructor in Experimental Physiology in the Post-Graduate Course of Medicine in the University of Pennsylvania.

As early as 1849, Nunnelly (*Trans. Prov. Med. and Surg. Association*, xvi. 1849) stated that the effects produced by *chloroform* by a like quantity and in parallel circumstances, as far as could be ascertained, were similar but not identical, and that they were far more considerable in some cases than in others, and even upon the same animal the effects of the same dose were greater at one time than at another. Proof of this truth is not wanting, but is unfortunately only too plentiful, as is instanced in the frequent deaths which have been reported as occurring from the use of this agent, and by doses wholly out of proportion to the effects produced. To the experimental physiologist and therapeutist, similar cases occurring in animals during anæsthetization with chloroform must be numerous, if this agent has to any extent been employed; and, in speaking from personal experience in the chloroformization of some hundreds of animals, many such instances are recalled to mind,—some indeed, which are even the more striking because of sudden death occurring after the removal of the inhaler, and before complete anæsthesia was induced (see also Report Brit. Med. Assoc. Committee, *Brit. Med. Journ.*, 1879); and even deaths taking place in patients under similar circumstances are not want-

[1] It was the author's intention to give, in connection with the following notes, the results of a physiological research which has been commenced in this connection, but upon a second consideration it appeared doubtful as to how soon this investigation would be completed. As anything of practical value relating to anæsthetics must always be of momentary importance to the profession, and as there is much to be learned from the literature of the subject alone, and as there are many facts herein contained which are of considerable interest and not generally known, and may prove of immediate value to both the therapeutist and experimenter, it was deemed best not to withhold this portion of the paper, but rather to let the record of the experiments follow as a separate article.

ing, as is attested by Kappeler (*Part XX., German Surgery*, by Billroth and Luecke, quoted by Reeve), and by records of chloroform deaths already reported. In Kappeler's case death occurred in two minutes after the administration of chloroform had been stopped. In the report of the British Association's Committee on their experiments on animals it is stated that in two instances sudden and unlooked-for effects on the heart occurred after more than a minute had elapsed since the administration of any chloroform. My own experiments on animals with the *ethyl bromide* have yielded similar results, and so strikingly analogous that I can safely assert, that, were the results of my experience with the deaths following the use of chloroform and the ethyl bromide in anæsthetization tabulated in parallel columns, not even the keenest observer would be able to tell which was which. In the laboratory the bottles containing these compounds were on the table together, and were employed without any special choice, the nearest or handiest being used; and I must acknowledge that, where death ensued, as it did in quite a number of instances, the only way I knew which one of the two was the cause of it was by resorting to the odours of the two, and thus distinguishing them—their toxicological effects being so similar as to be beyond the power of discrimination. The same remarks apply equally well and with equal positiveness to several other chlorinated and brominated anæsthetics, and the list could be considerably amplified were it necessary, or did space permit.

That the halogens are decided and general depressants of the animal organism is a fact undisputed by the therapeutist; that they exert a special depressant influence on the heart is universally conceded; and that most of the compounds in which either of these elements enters, especially in an elementary form and in any well-marked or appreciable proportions, partake to a greater or less extent of this depressant quality, and more especially so, if the elements are in a loosely molecular condition, such as is probably the condition in all ethers, is also acknowledged. Consequently, in looking over the list of compounds used as anæsthetics (some thirty or forty in number), it was a noticeable fact that the compounds containing either of these elements were, as a rule, unmistakably more dangerous than others; and the obvious reason of this was the presence of one or the other of these principles, which, being in a probably loosely molecular combination, acted either in combination as such, or were readily dissociated under favourable conditions, and at such times made their decidedly paretic action on the heart manifest. The writer would not here be understood as inferring that either in these toxic elements, or in their probable liberation in the system alone, resides the power of causing sudden, abnormal, and overwhelming effects, or of being invariably the cause of sudden death; for it must be apparent that peculiar idiosyncrasies, general asthenic conditions and especially so of the heart, the greater impressionability of the heart or of its nervous mechanism at times than at others

(even in apparently normal states of the economy), variations in the temperature of the surrounding media causing a greater volatility of the compound used, and the necessarily greater concentration of the vapour inhaled, etc. etc., must play at times a very important part in such cases. However, that all chlorinated, brominated, and iodated anæsthetics may act at times altogether out of proportion to the dose and under similar circumstances, and that those which have already been used to any extent have done so, is well attested in the papers already written, or by experiments recently made by myself on animals, as well as by the numerous deaths which have been reported from the needless use of this group of substances.

To look over the death-list from anæsthetization by this particular class of compounds, and in cases in which they were not especially indicated, and where some of the safer anæsthetics, such as ether, would have answered the purposes required, and where they have been unjustifiably used before their physiological actions were previously determined by experimentation on animals, and their safety assured or their dangers indicated, is positively appalling; while the number of cases, almost innumerable, where life's fragile thread was almost broken, the trusting patient but snatched from the chasm of death by the timely administration of physiological antidotes or the almost superhuman efforts of the physician and attendants, is alike shocking. Let us but glance at the chloroform death-list, and, as horrible and incredible as it may seem, there have been *reported* an average of about *a death for every month since the time of its introduction.* With this array of fully authenticated cases before us, what, indeed, must be the actual number?—for it must be conceded that probably double, triple, or quadruple as many more were not reported, and will never come to light. Even Kappeler alone says that he knows of four cases never reported, and personally I know of two. However, it needs no words of mine to remind the profession of the dangers of chloroform; so let us but briefly notice several others of this class of anæsthetics.

Methylene Bichloride, which was introduced by Richardson (*Med. Times and Gaz.*, 1867, p. 478) as a pleasant anæsthetic, but in connection with which he expressed no definite opinion as to its safety, has now been entirely cast aside by the profession as being entirely too unsafe. Kappeler says that experience shows it to be as dangerous, if not more so, as chloroform, and furnishes a list of nine cases of death from its use. Unfortunately, I have not had a copy of Kappeler's work at my disposal; but in looking over the details of cases published in the journals to which I have had access (*Med. Times and Gaz.*, 1869, ii. p. 524; *Lancet*, 1869, p. 582; *British Medical Journal*, Sept. 1871; *Pharmaceutical Journal*, 1871, p. 875, two cases; *British Medical Journal*, August, 1872; *Lancet*, 1873, i. p. 23; *Ibid.*, 1877, ii. p. 26), I have found that in several of them doses of a drachm and a half caused death, and, judging from the symptoms, it must be undoubted that death ensued in some of them at least

from cardiac paralysis. The experiments made by the British Committee on frogs show that the heart becomes slowed and is soon stopped, and that *the heart was affected the same as by chloroform*, the first sign of paralysis being the distension of the right ventricle. Even were it not certified by the above Committee that it affects the heart like chloroform, the fact of death occurring after doses but ordinarily sufficient to produce anæsthesia is sufficient to impress every one with the truth that it acts, like chloroform and ethyl bromide, wholly out of proportion to the dose.

Let me revert to *ethyl bromide* or *hydrobromic ether*, which has but recently come into vogue through the recommendation of Turnbull and of Levis, and which has, during the few months of its usage, and indeed very limited usage, added proof to the above-asserted toxic properties of all the brominated anæsthetics. In referring to the articles published by these gentlemen, one is at once impressed with the strong recommendations given the ether, and the enthusiasm experienced in the discovery of so valuable a compound; and Levis (reprint from *Medical Record*) stated, that practically it was the best anæsthetic now in use. But, if what he previously asserted, that "the physiological action of the bromide of ethyl did not incline to the dangers of cerebral anæmia and cardiac syncope, which sometimes occur in chloroform, and that no tendencies in such a direction seemed to threaten," were proven true by subsequent investigation, the ether would not so early have fallen into disuse. And had experimental investigations been pursued in the lower animals previous to those on man, like those by Wood (*Phila. Med. Times*, 1880, p. 370), such unfortunate results would probably not have followed in Levis's, as well as in the hands of others who have followed in his footsteps. While advising his practitioners to be cautious in its use, Levis describes the method of administration preferred by himself, which, in our opinion, is of itself dangerous. His method is this, that "in commencing the inhalation of bromide of ethyl to make a rapid and decided impression, with the lint and napkin held closely over the nose and mouth of the patient." If we have here an agent proven to be dangerous, if not quite as dangerous as chloroform, it needs no further argument to show that the same precautions must necessarily be observed in its administration as with its more popular predecessor.

Squibb (*Medical Record*, 1880, p. 379) warns those who use bromide of ethyl to be cautious, because he deems it of the nature of a loosely molecular compound, and hence he argues its liability to become broken up in the system and bromine liberated. Although the experiments of Wolff (*American Journal of Pharmacy*, 1880) would seem to show that this change does not occur out of the body, yet as we do not know in what form the ether is eliminated, and that fatal effects have followed its use, which resembled those in bromine-poisoning, we are bound to accept Squibb's assertion with deference, at least until it is proven to be otherwise than correct.

But whether bromine is liberated or not does not affect the argument, for we do know that Wolff (*loc. cit.*) found that death occurred in one of his experiments on rabbits, and that it typically resembled that caused by chloroform by sudden cardiac failure; and Wood (*loc. cit.*) has proved that it is a direct cardiac depressant, which I have fully corroborated by my own experiments, and have further indisputably proven that it at times acts altogether out of proportion to the dose used, as already stated; and that at least two deaths have followed its use (Sims, *Medical Record*, 1880, p. 361; Levis, *Medical News and Abstract*, June, 1880). Moreover, several cases have occurred in Philadelphia hospitals in which such alarming symptoms occurred that only by the most strenuous efforts could the patients be rescued from impending death; and a case of this nature is reported by Little (*Medical Record*, April 3, 1880); and other instances, where the administration was stopped, or the ether was refused to be given by resident physicians through absolute fear of disaster, could also be given.

It will, however, undoubtedly be said, and indeed has been said, that neither of the cases reported by Sims or Levis was due to the use of anæsthetics *per se:* in the former instance because of the very depressed condition of the patient; and in the latter because death did not occur until many hours following the administration of the anæsthetic. But in connection with these cases we know, first, that Emmet (*Gynæcology*, 2d edition, p. 746) called the attention of the profession to the danger of administering anæsthetics where any disease of the kidneys exists because of the active part taken by these organs in the elimination of them; second, that Squibb asserts that bromide of ethyl is a loosely molecular article, prone to undergo decomposition in the system and to liberate free bromine; 3d, that ethyl bromide is a marked cardiac depressant, as proven by both Wood and myself, by actual examination. Sims's case certainly did have symptoms in harmony with those caused by some toxic agent such as bromine. The woman also had a marked scantiness in the secretion of the urine, and on post-mortem examination it was found that she had acute catarrhal nephritis, indicating that the kidneys were disabled from performing their function in eliminating the ether, hence its retention and its probable decomposition in the economy, with the subsequent toxic symptoms. In Levis's case it seems plain that a simple explanation of the death of the patient lies in the fact that the heart, which had become so enfeebled from exhausting chronic disease, was unable to bear the strain of the powerful depression of its already diminished powers that ensued upon the administration of the anæsthetic, and as a consequence broke down under the excessive load.[1] And lastly, as evidence going

[1] An analogous instance of a medicine apparently acting out of proportion to the dose is illustrated in the incipient stage of typhoid fever, where, on account of an irritative condition of the bowels, an ordinary cathartic dose will produce hypercatharsis.

towards proving that Sims's case was due to bromine-poisoning, and in corroboration of Squibb's assertion, I quote from experiments made by Nunnelly (*loc. cit.*, 327) with a similar compound, the *Ethylene Bibromide*, as well as with the *Ethyl Iodide* (*loc. cit.*, p. 324), in which similar results followed, in so far that the animals appeared perfectly well after the experiments, but all of them, after some hours, perished from *blood-poisoning* (see, also, *Ethyl Iodide*, *Methyl Iodide*, *Iodoform*).

Methyl Iodide, which was introduced some years ago, has never come into general use because of its being considered unsafe by both Richardson and Simpson. The former observer (*Med. Times and Gazette*, ii. 1870, p. 470) found it to cause great excitement of the heart and circulation, which was evidently a sign of cardiac depression, if what he thought was true, that the *iodine* was the efficient cause of the phenomena which lie outside of the narcotism. He further certifies that the *Amyl Iodide and Chloride act similarly to the Methyl compound.*

Chloral Hydrate, although not an anæsthetic in a therapeutic sense, has, like chloroform and ethyl bromide, given us painful instances of its acting at times altogether out of proportion to the dose. Fuller (*Lancet*, March, 1871) quotes a case where thirty grains caused death in a young lady. Schwaighofer (*Irish Hospital Gaz.*, 1873) reports another of a drunkard, in which a drachm produced death; and three other cases (Reynolds, *Practitioner*, March, 1870; Watam, *Med. and Surgical Reporter*, Jan. 1871; Fuller, *loc. cit.*), in which forty-five, eighty, and thirty grains respectively caused alarming symptoms, and from the large dose death nearly ensued. Death has resulted from a dose of ten grains (*American Dispensatory*, 1880, p. 396). Other deaths have been reported (*Medical Times and Gaz.*, 1871, pp. 131, 672; Norris, *Lancet*, 1871, i. p. 226, and Browne, *ibid.* p. 574), and in some of these cases indisputable evidences of its power of weakening the heart were present. Did chloral hydrate become decomposed in the system into formic acid and chloroform (Personne, *Journ. de Pharm. et Chimie*, 1870; and Pellogio, *Schmidt's Jahrbücher*, bd. cli. p. 89; Liebreich *Wiener Med. Wochensch.*, Aug. 1860), we could readily account for its acting at times in a manner wholly disproportionate to the dose, and for its being a cardiac depressant; but as recent investigations disprove this theory (Hammertin, *Schmidt's Jahrbücher*, bd. cli.; Rajursky, *Ibid.*, bd. cli.; Amory, *N. Y. Med. Journ.*, 1870; Djurburg, *Schmidt's Jahr.*, bd. cli.; Leurison, *Archiv Anat. u. Phys.*, 1870), we must look elsewhere for this toxic principle.

Hydriodic Ether or *Ethyl Iodide*, also used by Nunnelly (*loc. cit.*, p. 324), was found to be so dangerous as to entirely preclude its use in medicine for anæsthetic purposes; and he states that whatever anæsthetic property it might possess (and this is not insignificant) it never could be employed in practice, as its action is so very deleterious; for out of the four animals experimented upon, three of which were rendered insensible,

all died, and the fourth had not sufficient of the vapour to render it in the least insensible, and yet for two or three days it was doubtful whether it would recover. Like the bromide of olefiant gas (ethylene bromide), its immediate effects were not so dangerous as the consequences of inhalation were in a few hours; even when not enough to produce insensibility had been used, and when the animal to all appearances had been perfectly well, death would supervene. In one case the odour of the ether was distinctly perceptible in the brain twelve hours after death, and Nunnelly thinks that death was caused by *blood-poisoning*. Therapeutically it has been used in recent years "*by inhalation to bring the system speedily under the influence of iodine.*" (*National Dispensatory*, 1880, p. 114.)

Bromide of Olefiant Gas or *Ethylene Bromide* was also condemned by Nunnelly (*loc. cit.*, p. 327), who stated that, although it produced insensibility, it caused the respiration to become laborious, and although the appearances of distress speedily disappeared when the animals were released, yet in a few hours they all, without exception, died. He further remarks that in this respect it differs from other (?) anæsthetics, because of the animals appearing well immediately following the experiments, but soon dying. He attributes this effect to *blood-poisoning*.

Iodoform was not sufficiently volatile to cause anæsthesia (Nunnelly), but, from what we know of its use, when given per stomach or used locally, it possesses powerful anæsthetic (analgesic) properties. Unfortunately it has not been used sufficiently internally, nor have physiological experiments been pursued to such an extent as to give us an accurate knowledge of its action on the economy; yet we do know that it diminishes the pulse-rate, produces muscular and nervous debility, and is decomposed in the body, and that, when applied to mucous, serous, or abraded surfaces, it *becomes decomposed by the fat, and the iodine is eliminated from the body in the form of soluble iodides*. If iodine is liberated in the system, no further comment is needed.

Carbon Dichloride or *Chloric Ether* has been used to a sufficient extent to indicate that it produces distinct cardiac depression.

Bromoform, which possesses undoubted anæsthetic properties, was found in experiments of my own to powerfully depress the heart, and in one experiment on a small dog the intravenous injection of thirty minims of the preparation caused immediate cardiac arrest. Consequently, it was considered useless to pursue any further investigation in this line.

Tetrachloride of Carbon (CCl_4) was used by Laffont (*American Dispensatory*, 1880, p. 354), who found that it caused great debility of the heart, and lowering of the vascular tension. Simpson (*Medical Gazette*, 1865, ii. p. 651) previously used it under the name of *Bichloride of Carbon*, or *Chlorocarbon*, and more recently the same compound has been used by Smith (*Lancet*, 1867, i. pp. 575, 660). The latter observer found, in the post-mortem examinations of the animals experimented on, that

the auricles were much distended with blood, and especially on the right side. He noticed that the heart did not beat after the cessation of respiration, and that the pulse was decidedly lowered. In conclusion, it is stated that "when pushed to extremes it seems to destroy life by causing an arrest of the circulation of the blood through the lungs, a distended condition of the right side of the heart, an insufficient supply of blood to the left side of the heart, and consequently diminished systemic circulation."

Chloride of Ethydene, or *Ethylidene or Ethidene*, was first used by Snow (*Anæsthetics*), and more recently by Liebreich (*Med. Times and Gazette*, 1870, i. p. 642); the British Medical Association Committee (Action of Anæsthetics, *British Medical Journal*, 1879); Bird (*Medical Times and Gazette*, 1879, i. pp. 62); and Reeve (*New Remedies*, Nov. 1880, p. 334—quoted from *Chicago Med. and Surg. Examiner*, June, 1880). Liebreich considers it somewhat safer than chloroform; the British Committee found an enormous diminution in the arterial pressure, and that the heart-beats became so infrequent as to be virtually ineffectual in supplying the respiratory centres with blood. Bird esteems it a powerful cardiac stimulant, and states that all the patients under its influence presented the appearance of a strong cardiac stimulant, but that he would not like to keep a patient long under its influence for fear of a reaction in the opposite direction. His investigations were not carried far enough to justify this conclusion of its cardiac action, and, as his conjecture is contrary to the results of all other investigators, it must be rejected as untenable. Reeve found a diminution of blood pressure, which differed from that caused by chloroform, because it did not advance to complete extinction, nor exhibit such wide variations in its effects at different times in the same animal. A death from its use in Berlin has been reported by Kappeler (*loc. cit.*). Steffer (Binz's *Evidences of Therapeutics*, p. 69) says that it resembles chloroform in ultimate action, yet is not so dangerous.

Ethylene or *Ethene Bichloride*, or *Dutch Liquid*, was used by Nunnelly (*loc. cit.*), who speaks of it in a decidedly laudable way, stating that just as small a quantity will produce anæsthesia as chloroform, but that a much larger quantity is required to destroy life. Simpson (*Edinburgh Medical Journal*, 1848, vol. viii. p. 740) also made some investigations with it, and found that when its vapour was inhaled, it caused so much irritation in the throat that but few persons could endure inhaling it until anæsthesia was produced, and that the condition of anæsthesia was not attended with any excitement of the pulse. On himself it produced such a degree of irritation in the throat that it did not disappear for many hours. Recently, the British Committee (*loc. cit.*) used it, and report that no anæsthesia was produced up to the commencement of convulsions. The results of a series of experiments (*Phila. Med. Times*, May 7, 1881)

made by the writer with this compound indicate that it is a powerful anæsthetic, and that it fulfils considerable that Nunnelly claimed for it. It is undoubtedly a direct cardiac depressant. Why the British Committee got such anomalous results is rather curious.

Butyl Chloride (British Committee) caused the cardiac pulsation to become weaker, and finally extinguished; while *Methyl Chloride* only effected drowsiness. *Isobutyl Chloride* was not noticed as regarding any cardiac action.

Notwithstanding the fact that the above array affords indubitable proof to warrant the assertion that probably all chlorinated, brominated, or iodated anæsthetics do act as cardiac depressants, and goes to sustain Squibb's belief of their molecular condition, and as it likewise shows that unexceptionally, where used to any extent whatever, they have produced death by doses wholly disproportionate to ordinarily cause such a result, yet it is but a little venture to further assert that were any of these compounds, of which either of the above facts has not been proven to be true, to be investigated thoroughly by experimentation in the lower animals, doubt would no longer exist of the correctness of this belief.

A most interesting question here arises as to the *modus operandi* by which anæsthetics produce death, and one, indeed, which has constantly been in the minds of those particularly interested in these compounds, and consequently, as Reeve writes regarding chloroform, "we have had explanations without number, hypotheses the most untenable, and theories the most fantastical; ingenuity has been taxed to the utmost in the formation of some of them, and logic torn to tatters." Thus we have had theories depending upon mechanical, chemical, and physiological effects; stoppages of the air-passages with mucus, or by the falling back of the tongue; impurity of the compound used; idiosyncrasies of the patient; abnormal condition of the system; degree of concentration of the vapour; emotion or peculiar mental condition of the patient, such as fear of the possible consequences of the inhalation; improper methods of administration; the greater impressionability of the heart at times than at others, etc. And, as to the cause of death, about as many theories and as diverse have been advanced. But, without entering into all this distressing detail, it is only necessary to state that it is conceded that whatever may be the conditions favouring death, it does occur practically from either asphyxia or syncope, and that the latter condition may be the result of either a direct action on the heart, or by the inhibition of the heart through a stimulation of the inhibitory apparatus. But doubt can no longer exist that death in man in a vast majority of cases is the result of a paralysis of the heart itself by a direct local action, and not of a reflex nature by acting on the inhibitory nerves. The former has been proven; the latter not. It is also equally certain, except in cases where the vapour has been administered for a prolonged period in very dilute form, that death very seldom is the

result of asphyxia, so that, practically, sudden deaths are due to cardiac paralysis.

Just why it is that the heart appears to be more impressionable at some times than at others, and why a person may be safely anæsthetized several times with chloroform, and on a subsequent occasion and under similar circumstances perish during its administration, is a question which has called forth many answers, some of which are as fanciful as the processes advanced to account for the deaths themselves. The whole answer *practically* can be simply and satisfactorily contained in the single word—*dosage*. It is one thing, as we all know, to give a man a grain of morphia in divided doses and spread out over several hours, and another to give him the whole at a single dose; and just as true is it, that it is one thing to give a drachm or two of chloroform in a few inhalations, or to give it slowly during a period of some minutes. And while it is one thing to give a medicine hypodermically or by the stomach, it is yet another (in effect) if given intravenously; and especially so, in regard to medicines affecting the heart or nervous centres; and any one who has watched the blood-pressure of animals under the influence of chloroform must have been struck with the remarkable variations and the diminution of heart-beats which occur after each fresh administration, and of the sudden deaths often occurring immediately after, while, if the drug has been given by the stomach or hypodermically, these remarkable phenomena are comparatively absent. The drug when given by inhalation is absorbed so rapidly that practically it acts as an intravenous injection, and reaches the heart in a state of concentration almost as great; where, on the other hand, it must be slowly absorbed from the stomach or subcutaneous tissue, the drug reaches the heart in such a dilute condition as to be unable to make such a decided impression, and as a consequence when death ensues it is from asphyxia, the same as when the vapour of chloroform is given very dilute and for a prolonged period. Reeve (*Am. Jour. of Med. Sci.*, p. 199, July, 1880) says, that "we find no such idiosyncrasies in regard to other medicines," and that "opium, strychnia, and arsenic never cause death when administered in ordinary doses." Although this is not by any means a parallel case, because neither of these medicines is ever administered either by inhalation or by intravenous injection, nor are they decided cardiac depressants, yet deaths have occurred from the use of morphia in ordinary doses, when given hypodermically; for a death ensued in one case from an injection of one-sixth of a grain. Just now I recall a better instance, and in connection with apomorphia; a drug which promised to be the most valuable emetic of the Pharmacopœia, but which has been almost entirely abandoned for therapeutic purposes. This drug was asserted by some of the early investigators not to affect the heart or arterial pressure, but more recently the reverse has been found true (and conclusively proven by my own experimentation). In clinical medicine such alarming symptoms of a syncopal condition

and threatening collapse were induced by "*very small doses*" (ordinary doses), that it is never used in this country as an emetic except in cases of extreme emergency.

Doubtless, if time permitted such a laborious research in the literature before me, similar instances could be found where other cardiac depressants acted in this way,[1] and scarcely anything could be more safely predicted than that, if it were the custom and practicable to give this class of remedies by inhalation or by intravenous injection, deaths from them would be proportionately as great as from the popular anæsthetics under consideration; and there likewise can be no doubt that the reason they are looked upon as being safe is simply because they are never given by the above method, or in such doses as to produce such a profound impression on the system as is necessary to produce in anæsthetization; and hence they are absorbed relatively so slowly as to reach the heart in an exceedingly dilute condition, as already stated. An example illustrating the difference in the effects of intravenous and subcutaneous administration of the same amounts, I quote from my experiments with apomorphia (*Phil. Med. Times*, Dec. 1879) on animals in which the heart was sepa-

[1] Since the above was put in type, the writer is enabled to cite several instances in corroboration of this belief, and which are only the more valuable because of their illustrating the truth of it in three of our principal cardiac depressants. The first is a death which occurred in an adult in three hours from five grains of the fresh extract of *aconite* (Pareyra and Perrin, in *Buchner's Report für die Pharm.*, No. 68, p. 199, and *Med. Chir. Rev.*, Oct. 1839, p. 544; quoted by Tucker, *N. Y. Journ. of Med.*, 1854, i. p. 230). Two others took the same amount and received the same antidotal treatment and recovered. Tucker does not state what extract it was, whether of the root or leaves, but as it was probably the latter, and as the usual therapeutic dose is one or two grains, and twenty grains or more have been used during the day, it appears to be an interesting case for us. It will also be remembered that three drops of the saturated tincture of the root caused alarming symptoms (*National Dispensatory*, 1880, p. 97). This tincture (Flemings's) being two-thirds the strength of a fluid extract gives the amount of the drug in the dose taken as equivalent to one grain of the pure drug, or equal in a physiological point of view to from four to six grains of the leaves, or from a half to three-fourths of a grain of the extract of the leaves of the British Pharmacopœia. If the first case is not altogether a fair one as an illustration, because of the uncertainty of the preparation used, yet it will be admitted that the last one is. Headland (*Lancet*, July, 1856) gives an instance where fifteen drops of the tincture nearly proved fatal. A case is reported of a medical student (Andral's *Clinique Médicale*, Spillan, 1836, p. 698; quoted by Taylor, *Guy's Hospital Reports*, 1857, p. 415) who died in four hours from the effects of *two* grains of *tartar emetic*. Another is given by Richelot (*Ibid.*) of death in a child of four years from one-third of a grain. Moreover, Noble states (*Guy's Hosp. Rep.*, 1857, p. 415) that prostration and collapse followed in four cases of infants from ordinary doses. I have not yet seen his original paper. Stillé quotes a case of a woman in whom alarming symptoms were caused by half a grain. Nunnelly, from the results of a series of experiments on animals with *hydrocyanic acid* (*Med. Gaz.*, xl. 1837, p. 508), apprehends that the same creature is "liable to be seriously affected by a dose which at another time would produce but little effect." I will take occasion to resume a discussion of this subject at an early day.

rated from any central nervous influence, and so practically isolated, where after a subcutaneous injection no effect on the arterial tension was apparent, yet after an intravenous injection of the same amount, the arterial pressure was decidedly reduced, showing that although in both cases the dose was the same *apparently*, yet *practically* it was vastly different, and while it was evident that repeated subcutaneous injections could be borne with relative freedom from danger, on the other hand, regarding intravenous injections, it must be obvious that the reverse is true. That this argument is equally applicable to anæsthetics needs no further comment.

Moreover, there can be no doubt that the heart and other parts of the system, but especially the former, are more readily influenced at times by impressions, both intrinsic and extrinsic, than at others, and particularly so in those persons possessing a nervous temperament; and it is not an uncommon thing for such individuals to experience, on some occasions, a palpitation, or some vague or indefinable sensation about the heart, while at others, under similar circumstances, they would appreciate nothing of the sort. If, therefore, the heart and other vital parts are at times more susceptible, and more readily influenced by mental or other intrinsic impressions at certain but indefinite periods, why is it not probable that they are more susceptible at these periods to extrinsic influences, such as medicines? If this is so, and we probably have good illustrations of the truth of it in the instances already given, it is not difficult to conceive how the same dose, under apparently similar circumstances, may have double the effect it would have had on other occasions. As, for instance, let us illustrate the resistance of the heart to a given drug as being 10: if, now, the resistance is reduced to 5 by causes which we do not as yet understand, it is readily understood how the same dose will produce a given effect in the first instance, and double the effect in the second. If we now superadd to this changeableness of the impressionability of the heart a second factor, as shown in the very excessive variability of the degree of concentration of the vapour inhaled, the subject is made still more comprehensible, and it certainly requires no stretch of the imagination, when the many surrounding and modifying conditions are considered, to understand how it is that some inhalations may contain a very large percentage of the anæsthetic, and others relatively less, and, as a consequence, how a comparatively larger quantity may thus reach the heart at one time than at others. For it must be obvious, when we consider these conditions attending the administration of an anæsthetic, that the drug does not reach the heart in a steady supply, but gaining entrance into the pulmonary acini in an ever-varying degree of concentration, sometimes in large, and at others in small quantities, it must be certain that it reaches the blood in similarly varying proportions, because it finds its way into the circulation immediately, and, as a consequence, its action on the organism must then be analogous to repeated

intravenous injections of similarly varying amounts. For the sake of illustration, let us assume that when a given anæsthetic is administered the depressant effect on the heart is 10, and that now, as a result of the modifying conditions, the average degree of concentration of the vapour is doubled, is it not evident that the depressant action on the heart will be doubly felt? And now let us suppose we have a condition of the system when the heart's resistance is only half the normal, and we have the average degree of the concentration of the vapour considerably increased, it is readily conceivable as to how death may supervene.

To reiterate: it therefore must be apparent that we have here two important and self-evident factors, representing, respectively, two modes by which dosage is materially affected, and in accounting, in part at least, for the capriciousness in the action of chloroform and other cardiac depressants at different times under apparently similar circumstances, and a satisfactory explanation of the reason of their acting on such occasions altogether out of proportion to the dose used, and of the occurrence of death from ordinary anæsthetic doses.

Further, when we have a compound acting on the heart as a depressant, of a probable loosely molecular combination, which is liable to undergo under favourable conditions a decomposition in the blood, and of a composition which contains an element which, in a free state, is even more deleterious to the heart than the preparation itself, we certainly have added still another dangerous property.

It seems opportune in this connection to say a word in reference to the action on the nervous system, for we also have instances of the capriciousness of the action of anæsthetics, and of deaths as a result of *shock*, which are attributed to a sudden overwhelming of the nervous centres, and are, therefore, but other instances illustrating what was stated with particular reference to the heart in a previous paragraph. But the nervous system appears to be more strongly fortified against these sudden paretic impressions than the heart, and, as a consequence, death so seldom results from this cause, and as without exception probably every anæsthetic is capable of causing such an effect, it is obviously one of the dangers we must anticipate in the use of these compounds, but which we cannot guard against or expunge in our choice of preparations.

Therefore, the dangerous properties of anæsthetics, *i. e.*, those properties which we can avoid in our selection of a compound, resolve themselves, practically into decided depressant effects on the heart and on their containing toxic elements in their composition which may further, and possibly more powerfully, deleteriously affect the system by becoming liberated; and just such properties we find possessed by the group of preparations under consideration. It is taken for granted, of course, that compounds having such dangerous properties as some possess by causing an intense degree of irritation in the lungs and air-passages, etc., would undoubtedly

be avoided if for no other reason than the impracticability of administering them.

It may be said, however, that beneath the truth the writer is burying the truth, in so far that many other anæsthetics have been used not belonging to the above group, of which nothing has been said, and which also act as cardiac depressants, hence, that it must follow that this property of depressing the heart is not one peculiar to any class of anæsthetics, but a very general one. Admitting that other anæsthetics may induce cardiac paralysis before asphyxia is produced,—and it must be acknowledged that certain of them have a special tendency in this direction, such as hydrocyanic acid and creasote, the same as certain of the chlorinated compounds, such as the ethylidene and ethylene chlorides show a more decided tendency to the respiratory centres, but which is readily explained when we consider that the heart is so depressed as to be ineffectual in supplying the respiratory centres with blood,—yet the rule appears to hold good, and, to facilitate a comparison of these two classes of compounds, they are here placed in parallel columns :—

Chlorinated, Brominated, and Iodated Anæsthetics.	*Miscellaneous Anæsthetics.*
Chloroform, $CHCl_3$.	Aldehyde, C_2H_4O.
Chloral hydrate, $C_2HCl_3OH_2O$.	Benzole, C_6H_6.
Carbon dichloride, C_2H_4.	Coal gas.
Carbon tetrachloride (chlorocarbon) CCl_4.	Creasote, C_8H_8O.
Bromoform, CHBr.	Carbonous oxide, CO.
Ethyl chloride (chloric ether), C_2H_5Cl.	Carbon bisulphide, CS_2.
Ethyl iodide, C_2H_5I.	Ethyl oxide (ether), $C_4H_{10}O$, or $(C_2H_5)_2O$.
Ethyl bromide, C_2H_5Br.	Ethyl, acetate, $C_2H_3O_2C_2H_5$.
Ethylene bichloride (Dutch liquid), $C_2H_4Cl_2$.	Ethyl, methylate, $C_2H_6O\ (CH_3)_2O$.
Ethylidene bichloride (ethydene chloride), $C_2H_4Cl_2$.	Ethyl, nitrate, C_2H_5ONO.
Iodoform, CHI_3.	Ethyl, formate, $CHO_2C_2H_5$.
Ethylene bromide, $C_2H_4Br_2$.	Acid, hydrocyanic, C_2N_2H.
Methylene bichloride, CH_2Cl_2.	Hydrogen sulphide, SH_2.
Butyl chloride, C_4H_9Cl.	Naphtha.
Methyl chloride, CH_3Cl.	Nitrous oxide gas, N_2O_2.
Isobutyl chloride, C_5H_9Cl.	Olefiant gas, C_2H_4.
Methyl iodide, CH_3I.	Essential oils, $C_{10}H_{16}$.
Amyl iodide, $C_{10}H_{10}I$.	Pyrrol, C_4H_5N.
Amyl chloride, $C_{10}H_{10}Cl$.	Acetone, C_3H_6O.
	Amylene, C_5H_{10}.

While these two classes represent the halogen and miscellaneous compounds respectively, yet were two other classes formed from them as representing syncopal and asphyxiating anæsthetics, or those having a decided tendency to depress the heart and those whose tendencies are to compromise the respiratory function, scarcely much change would be made, and with but few exceptions the above division would stand as it is. And while it is to be seriously regretted that our knowledge of the physiological actions of these compounds is so grievously inadequate, and that of

such a small percentage of the whole number we have scarcely sufficient information to be able to assert positively what their action is, yet we do know that every one of the halogen anæsthetics which have been investigated in reference to their action on the arterial pressure and as to their mode of producing death, have been found to both diminish the blood-pressure and paralyze the heart; and that probably at least sixty per cent. of the deaths from chloroform have been due to arrest of the heart; while in regard to the miscellaneous anæsthetics, it is undoubted that some of them do diminish the arterial tension and depress the heart, and will cause death by cardiac paralysis; yet, there seems to exist that unmistakable predominant tendency to produce death by asphyxia and not by sudden cardiac arrest, although with those which possess to any marked degree a cardiac depressant action, a sudden failure of the heart is likely to occur, as with the halogenated compounds. Every anæsthetic has a decided tendency to cause death by asphyxia, and the reason of this is very apparent when we consider how greatly all the functions of animal life are diminished, but particularly those of the nervous system, whose excito-motor functions especially must always be very decidedly lessened in anæsthesia; and when we have such a serious interference with the transmission, reception, and origination of impulses, as is invariably present in complete narcosis, it is not difficult to understand how it is that any anæsthetic possessing this powerful depressant power may, if given in excessive doses (a too concentrated condition of the vapour inhaled), or in states of the system when these centres are in an abnormally impressionable condition, cause a sudden paralysis, such as has followed the use of ether, which, as is generally admitted, is beyond doubt, with but one exception, the safest of all anæsthetics in general use, and the least liable to cause death without a warning such as the merest novice must appreciate. Yet because it must follow that every anæsthetic may and will cause death by asphyxia, the same universal rule does not apply to them in regard to their effects on the circulatory system, and instead of its being the rule to decidedly depress the heart and blood-pressure, excluding the chlorinated, brominated, and iodated compounds, it is probably the exception; therefore, it must be evident that while in the anæsthetic compounds such as creasote and hydrocyanic acid, their decided depressant action on the heart is an accidental concomitant associated with their other physiological properties, on the other hand, in the halogen preparations the action appears to be so universally existent as to suggest that there must be some inherent toxic principle or principles which enter into the composition of each, and is common to all of them, and which endows them with this one dangererous property.

That this toxic principle is not to be found in the radicles forming the bases of these compounds, but in the negative elements, is obvious for several reasons, and some years ago Richardson reached a similar con-

clusion regarding one of these particular divisions, and stated that he deemed all *chlorinated* compounds dangerous. More recently, Squibb has warned us to be careful in the use of ethyl bromide, for fear of inducing brominism; and we know that by giving the ethyl iodide by inhalation, the system is rapidly brought under the influence of iodine. Now, for instance, let us take ether, an oxide of ethyl, and substitute for the oxygen bromine, and what is the result? The ether, which was before a cardiac stimulant, and would almost without exception cause death by asphyxia, has now become excessively increased in power, and the half drachm of the compound will produce an effect more intense than ten or twenty or more times the original amount, and, instead of a cardiac stimulant, we have a decided depressant, and instead of having deaths following from slowly induced asphyxia, we have deaths occurring from cardiac arrest, and sudden, overwhelming, and unanticipated results following its use. Further, take olefiant gas, and we find that when inhaled it possesses but feeble anæsthetic powers and causes death by asphyxia; but add bromine or chlorine to it, and we have powerful anæsthetics and undoubted cardiac depressants.

Considering all these things, there can be but little doubt that the dangerous properties, if not the degrees of potency, of anæsthetics, are decidedly enhanced by the addition of either of the halogens, and it is not at all improbable that these ethers are mostly loosely molecular compounds, some of which are more readily decomposed in the system than others, and that their degree of dangerousness, *cæteris paribus*, depends upon the relative amount and relative physiological power of either of these halogen principles which enter into the composition of any one of them, and upon the degree of fixity of the molecules.

ARTICLE V.

A CASE OF ABSCESS OF THE LIVER, COMPLICATED WITH EMPYEMA; OPERATION; CURE.

By WALTER MENDELSON, M.D., House Physician to the New York Hospital.

MARY G., aged 32, a native of England, married, a labouring woman, was brought to the hospital on October 9th, 1880, and gave the following history:—

Two weeks previous to admission, she began to suffer from a sudden sharp pain in the right side of the chest, the pain being made worse by motion or cough, or by lying on the right side. Patient also had a hacking cough, with slight mucous expectoration, and suffered a good deal from shortness of breath. This condition persisted for one week, when she was seized with a chill followed by profuse sweating. Chills and sweats continued to recur with tolerable frequency, and the patient lost her strength

and flesh with great rapidity. The cough also increased in severity, and the expectoration became muco-purulent in character.

On admission the pulse was 116, the respirations 36, and the temperature 102.8°. The patient was extremely exhausted, being almost too weak to speak. She lay on her back, propped up in bed, breathing very cautiously, as if in great pain, and wearing an expression of keen anxiety. Emaciation was very marked, and the patient presented all the appearances of having been used to much hard work and poor food.

Physical examination of the thorax showed the respiration on the left side, both in front and behind, to be vesicular, but exaggerated in degree. On the right side behind, from about two inches below the inferior angle of the scapula to the base of the chest, there was loss of tactile fremitus and flatness on percussion. Auscultation of the same region revealed ægophony and bronchophony. Above the inferior angle of the scapula the percussion note was dull-tympanitic, and on auscultation a rude respiratory murmur was heard.

The upper border of the liver was at the sixth intercostal space; the lower on a level with the umbilicus.

A hypodermic needle was inserted into the pleural cavity in the eighth right intercostal space, and some very thick bloody pus withdrawn.

The woman was ordered brandy ℥ss, every three hours, and quinia sulphate gr. v, three times a day. The pulse continuing very feeble, she was ordered tinct. digitalis ♏xx. every three hours during the night, and was also sponged with a weak solution of tinct. belladonnæ to allay sweating, which was very profuse.

Oct. 10. The patient's dyspnœa was still very severe. At 9.15 A. M. resp. 48; temp. 104.4°. At 12 M. it was decided to aspirate the chest, although the patient's condition was such as hardly to allow of hope for a favourable issue. The largest needle, No. 4, of Dieulafoy's aspirator was inserted twice; first in the eighth, and then in the ninth intercostal space, about in a line with the angle of the scapula, the woman being propped up in bed with pillows. Each time only a drachm or two of very thick pus was drawn, owing to the needle becoming clogged, and as the patient became quite faint, and the pulse very feeble, further attempts were abandoned. At 2 P. M. the needle was again inserted in three different places, but not more than two ounces altogether were withdrawn from the pleural cavity. The pus was of a thick, viscid nature, and contained more or less brownish blood.

12*th.* Temp. 100.2°. Patient slept very little at night, being troubled by a persistent cough, which opium only in part relieved. Vomited considerably, and sweated profusely. Complained of but little pain. Urine was normal.

16*th.* Very little change occurred in patient since the last date: the temperature averaging about 102°, the respirations about 50, and the pulse about 115. On the morning of this day there was noticed, for the first time, in the right hypochondrium, just above and to the right of the umbilicus, a slight swelling. This was rather firm to the touch, and the seat of some tenderness.

19*th.* The tumour had become more distinct, being now as large as a goose's egg. The base was indurated and sloping, merging into the liver, whose lower border could be distinctly felt below it. The summit was crater-like, the basin of the crater being soft and fluctuating. There was no redness of the skin over the swelling; its contents could not be evacu-

ated by firm and persistent pressure, nor was there any impulse communicated to it by coughing. Examination of the chest showed the breathing and voice to be more resonant and amphoric in character, and the percussion note tympanitic, where it had formerly been dull. (Pneumo-thorax.)

21*st*. The tumour was slightly larger, though no signs of pointing were seen. Temp. 99° at 9 A. M. Patient still sweated profusely, which was in part checked by atropia gr. $\frac{1}{100}$, by the mouth, at frequent intervals.

23*d*. The tumour was less prominent and the edges more firm. The expectoration was rather scanty and whitish, and fibrinous in character. The sweating continued in spite of atropia. The range of temperature was lower, being from 99° to 101°.

28*th*. Patient sat up for a short time, her general condition being greatly improved, the sweating having become much less.

Nov. 2*d*. On this morning about one o'clock, patient suddenly awoke with great dyspnœa and coughing. She expectorated large quantities of purulent material, having a very fetid odour. The expectoration continued more or less profuse all day, the dyspnœa gradually subsiding.

5*th*. Expectoration still continued, and was unchanged in character. The tumour in the epigastrium was nearly imperceptible and quite soft to the touch. Patient was ordered cerium oxalate to control cough.

12*th*. The temperature had not been above 100.6° for the past four days. General condition was much improved.

18*th*. This morning the tumour was noticed to have reappeared, and was larger in size than before. It occupied the same position, was somewhat rectangular in shape and not so conical as at first. It extended one and a half inches to the left and one inch below the umbilicus. Its right border was one and a half inches beyond the mammary line. Its upper limit was at the costal edge. It measured about five and a quarter inches transversely, by four and a quarter longitudinally. As in the beginning, no impulse was communicated to it when the patient coughed, nor could its contents be evacuated by firm and continuous pressure. The tumour was somewhat tender to the touch, and the skin over it had a boggy feel. Fluctuation was very evident. Poultices were ordered, and calcium sulphide gr. $\frac{1}{4}$ three times a day administered internally.

20*th*. The tumour was aspirated with a hypodermic syringe, and a few drops of very thick odourless pus obtained. Temperature varied from 100° to 102°; pulse about 105; respirations 36. The expectoration on this day was noticed to have an orange-yellow colour, as if tinged with bile. (Unfortunately no chemical examination for bile was made.)

22*d*. By this time the tumour had increased considerably in size, its growth having taken place mainly to the left of the umbilicus. The skin over it had a brawny, hard feel, and was quite red and ecchymotic looking. The patient's breath was horribly offensive, having the same odour as her expectoration.

As the abscess showed such decided signs of pointing, it was determined to operate, which I did at 11 A. M., the patient being etherized. At 9 A. M. pulse had been 112, respirations 36, and temperature 101.8°.

An incision one and a quarter inches in length was made just above and one inch to the right of the umbilicus in the softest part of the tumour. After a rather superficial cut the pus was reached, and poured out in great quantities, about a pint or more discharging in a few minutes. The pus was thick, viscid, sanious, and clotted. It was mixed with portions of bright yellow pus and shreds of broken-down tissue. It was entirely

free from odour. The cavity was washed out with a solution of carbolic acid (1 to 40 of water), and on introducing a finger through the wound, the abscess was found to consist of two portions: one, the main cavity, lying to the right of the median line, and having the size of a very large orange; the other, a smaller one, about the size of a pigeon's egg, just to the left of the median line, the two being freely connected by a canal running transversely under the *linea alba*. The liver tissue could be felt projecting into the cavity, in hard, nodulated masses, covered with a pulpy material, which was easily scraped away with the finger. It was impossible to touch the bottom of the abscess with the finger, but a probe could be introduced for about four inches in a direction backwards, upwards and outwards.

A large drainage-tube was inserted and the wound covered with a compress wet in a 1–40 solution of carbolic acid, over which a piece of mackintosh was laid and the whole secured by a carbolized gauze body-bandage. A drachm of brandy and Magendie's sol. ♏v were given hypodermically.

At 1.30 P. M. the pulse was 118, the respirations 32, and the temperature 98.6°. At 10.30 P. M. pulse 120, respirations 34, temperature 96.6°. An ounce of brandy was administered and hot bottles were applied to the body.

23*d*. At 8.30 A. M., pulse 104, respirations 34, temperature 98.4°. Patient suffered little or no pain and slept well during the night. The abscess was dressed to-day by washing it out by means of an irrigator, with a weak solution of carbolic acid in warm water. A considerable amount of shreddy material and some pus came away. The discharge was perfectly odourless. The pus which came from the abscess on first opening it was examined by Dr. George L. Peabody, pathologist to the Hospital, who made the following report: "Pus in bad condition, with many broken-down cells and a great deal of detritus. Also many large, round cells, three to four times as large as pus cells, containing considerable pigment and some fat globules." Nothing that could be distinctly identified as liver cells was found.

27*th*. The first rise of temperature occured on this day at 4 P. M., the thermometer registering 100.2°. The cavity had been washed out every day, and had very rapidly decreased in size, not being more than half its original dimensions at this date. The patient, with the exception of some cough and occasional vomiting, did very well.

Dec. 27*th*. The patient by this time had been up and about the ward for a month, had gained in weight and strength, and was in excellent physical condition. On two occasions only was there a rise of temperature; once to 100.2°, and again to 102°. The abscess healed entirely, with the exception of a small sinus about an inch and a half long, which discharged a few drops of serum a day, and for the care of which the patient did not want to stay any longer in the hospital. Her cough and expectoration had ceased entirely. Physical examination of the chest revealed good vesicular murmur all over, except on the right side toward the base in the axillary line, where it was feeble and the voice-sounds distant. The lower border of the liver was still at the umbilicus, being bound down by adhesions. Being anxious to go, she was discharged as cured on this date. At no time during her illness had she been jaundiced.

Remarks.—The woman had in all probability an abscess of the liver before entering the Hospital (Oct. 9th), as the enlargement of her liver,

as measured on admission, showed. This abscess set up, by contiguity, a simple pleurisy, which lasted a week. At the end of that time the pleurisy became an empyema, as it would be quite likely to do in one having a considerable deposit of pus anywhere in the body, and run down by an exhausting disease.

Physical examination of the chest ten days after admission (Oct. 19th) showed that the empyema had become a pyo-pneumo-thorax. As there had not been anything to call especial attention to the chest, no sudden attack of great dyspnœa, it is more than probable that the air entered the pleural cavity gradually through a small and valvular opening, for although the chest contained pus, as was shown by aspiration on the day of admission, the woman did not expectorate any more than usual until two weeks after the discovery of the pyo-pneumo-thorax (Nov. 2d), when she was suddenly awakened in the night with great dyspnœa, and expectorated large quantities of very fetid pus, the expectoration continuing during the next day.

The bad odour of the material expectorated would go to confirm the previous presence of air in the pleural cavity, and the suddenness of its appearance would indicate that the opening through which air could enter into the pleural cavity was of such a nature (at least for a time) as to prevent the pus from escaping from the latter into the lungs. At this time the expectoration was simply purulent, and had not the appearance of being stained with bile. It is worthy of note that in the interval the epigastric tumour, which was observed (Oct. 16th) three days before the pyo-pneumo-thorax was discovered, had been diminishing in size, and a few days after the pus burst into the lung was almost gone. It would be hard to explain this subsidence of the tumour, except by supposing that it had discharged into the pleural cavity. Two weeks later, however, (Nov. 18th) the tumour was noted as having reappeared and to be larger than ever, and also that the sputum contained what appeared to be bile.

A few words in regard to the tumour. On its first appearance various theories relating to its nature were advanced. It seemed in the beginning as though it might be the gall-bladder, for it was in the place where this organ appears when distended, and was soft and globular. Careful exploration, however, revealed the sharp edge of the liver below the tumour, a condition which of course could not exist had it been the gall-bladder. As the edges became more indurated it was supposed to be an abscess in the abdominal walls, the result of the pus from the empyema making its way downward, for, be it observed here, there was no suspicion of hepatic abscess when the woman was admitted, and all her trouble was referred to her empyema. Against this latter view was the fact that the abscess could not be emptied by pressure and received no impulse on coughing.

From the first the hepatic origin of the abscess had been strongly advocated, in view of the enlargement of the liver and the mound-like edge of

the tumour, caused probably by the adhesions formed between the liver and the abdominal walls.

When the tumour was incised (Nov. 22d), and after evacuating its contents, the finger was introduced into the cavity; of course no more doubt regarding its nature remained. The pus from the abscess did not resemble that spit up by the patient, for it was mixed with blood, and not fetid; nor did it at any time subsequently become so.

Shortly after the abscess was opened the cough became less frequent and the expectoration less copious, and finally ceased altogether. This might have been due to the general and very marked improvement which occurred in the health of the patient immediately following the operation, and to the withdrawal of the irritation from the right side of the chest, which the proximity of the tumour to the diaphragm must have caused, even though no direct communication between the former and the chest necessarily existed.

It would seem to me, therefore, that most of the evidence would lie in favour of the empyema and hepatic abscess being distinct, though correlated; the only marked evidence against this being the almost complete disappearance of the tumour for a while, and the presence for a short time of what appeared to be bile in the expectoration.

My chief grounds for supposing the abscess to be distinct from the empyema is the fact that the expectorated products of the latter were extremely fetid, while the pus from the former was perfectly odourless. It seems to me that had an opening, no matter how small or valvular in character, existed in the diaphragm, the putrid pus in the pleural cavity must have infected that in the liver.

Thierfelder, in vol. ix. of Ziemssen's "Cyclopædia," says that cases such as this one seemed to be are of rare occurrence, and quotes one (confirmed by autopsy) reported by Loewer in the *Berliner Klinische Wochenschrift* for 1864 (p. 461).

ARTICLE VI.

ON LYMPHATIC HEARTS AND THE PHENOMENA ATTENDING THE PROPULSION OF LYMPH FROM THEM INTO THE VEINS INTO WHICH THEY OPEN.

By THOMAS WHARTON JONES, F.R.C.S., F.R.S., Professor in University College, London.

THE object of this paper is: to describe the phenomena attending the propulsion of lymph from a lymphatic heart into the vein into which it opens; and to point out the difference in these phenomena from those which attend the propulsion of blood from the left ventricle of the heart into the aorta and large arteries.

Our minds being familiar with the pulsation of the arteries attending the propulsion of the blood into them, we are very prone to conclude that pulsation of the vein must, in like manner, be produced by the propulsion of the lymph into it from a lymphatic heart. It is a fact, however, that no pulsation of a vein is produced by the propulsion of lymph into it from a lymphatic heart. In the two cases, in which we can directly observe the propulsion of lymph into veins taking place, we see no distension of the vessels such as that exhibited by arteries when the blood is propelled into them by the stroke of the heart, and on which the arterial pulse depends. The reason of this is plain: for the conditions under which the lymph is propelled from lymphatic hearts into veins are quite different, as we shall see, from those under which the propulsion of blood from the heart into the arteries causing their pulsation, takes place.

It is to be understood that I am not referring to the phenomena attending the systole and diastole of the hearts themselves, for, of course, the pulsations of a lymph-heart are similar to those of the blood-heart. What I wish to maintain is this: that whilst the propulsion of the blood into the aorta by the contraction of the left ventricle distends the aorta and large arteries, so that a pulsation is felt by the finger applied over the vessel—the propulsion of lymph, on the contrary, into a vein, as observed under the microscope, does not cause distension of that vessel such as would indicate to the eye that anything of the character of a pulsation capable of being felt with the finger, supposing the vein large enough to be touched, was a result of the propulsion of the lymph into the vein.

Preparatory to entering on the proper subject of this paper, I beg to call attention: 1st. To the conditions under which the propulsion of blood into arteries causing them to pulsate takes place. 2dly. To the conditions under which regurgitation of blood into veins causing the venous pulse takes place. 3dly. To an inquiry as to whether pulsation attends the rhythmical contractions of the veins of the bat's wing, and the acceleration of the flow of blood in those vessels thereby occasioned.

First, then, as to the conditions on which the arterial pulse depends: By the contraction of the left ventricle of the heart, the blood is propelled into the aorta and its larger ramifications. These vessels thereby become suddenly distended, and it is this sudden distension which is felt as the pulse by the finger on being applied with a little pressure over an artery.

The walls of arteries, having elastic and muscular tissues entering into their structure, are endowed with both the physical property of elasticity and the vital property of contractility—contractility of the kind which is tonic or continuous in its action, not rhythmical. By the combined operation of these two forces—elasticity and contractility—inherent in their walls, the arteries during the diastole of the ventricles, react and close in on the blood with which they had become distended at the time of the systole of the ventricles. The effect of the pressure thereby exerted on

the blood is to force it onwards in its course through the smaller arteries and capillaries into the veins; regurgitation into the ventricle being prevented by the semilunar valves of the aorta.

In consequence of the onward flow of the blood in the smaller arteries being in a great measure dependent on the pressure exerted by the reaction of the elastic and tonically contractile walls of the aorta and larger arteries on the blood distending them, during the diastole of the ventricles, the pulse of those smaller arteries is subsequent, by an appreciable interval of time, to that of the larger arteries.

In the web of the frog under the microscope, the conditions for pulsation are observed to be manifested in a small artery by its dilatation from distension with blood, and if the vessel be tortuous, by its becoming, at the same time, more bent at the bendings.

The constrictions and dilatations which the artery in the rabbit's ear is seen to undergo, have been erroneously described as rhythmical, and the artery itself viewed as performing the function of an auxiliary arterial heart; it being alleged that the artery by its dilatation receives and partly draws in the blood, whilst, by its contraction, it propels the blood onward in its course to the capillaries, and thus promotes the circulation. This is, however, entirely a mistake, the contrary being the case. The artery of the rabbit's ear is not endowed with rhythmical contractility. Its contractility is merely tonic like that of other arteries, and its pulsations, like those of other arteries, are the consequence merely of its becoming distended by the blood propelled into it from the heart.

When constrictions or dilatations of the artery do take place, the effect is that the supply of blood to the ear is correspondingly diminished or increased for the time, as is the case in other organs when their arteries become constricted or dilated. The constriction of the arteries in fact is propagated from branches to trunk so as to drive the blood back towards the heart instead of onwards through the capillaries into the veins. The only peculiarity in the rabbit's ear is that the alternations of constriction and dilatation of the artery are frequent and easily observable.

I come, secondly, to consider the conditions on which the venous pulse depends:—

When the right auricle is, by its contraction, propelling the blood into the right ventricle, a portion tends to regurgitate into the superior cava, there being no valve at the mouth of that venous trunk. The stream of blood in the superior cava towards the heart meeting this backward flow, checks it; and between the two opposite streams the vein and its feeders become distended. This distension taking place synchronously with the contraction of the right auricle, pulsation of the venous trunks may be felt at the time of that contraction.

The instance I have adduced is sufficient to illustrate the nature of the conditions on which the venous pulse depends. I need not, therefore,

stop to inquire how far the Eustachian and Thebesian valves are capable of opposing regurgitation—the former, into the inferior cava; and the latter into the sinus of the coronary veins; nor whether any pulsation of the inferior cava or coronary veins takes place.

We thus see that the arterial pulse and the venous pulse, both of them, depend on periodical distension of the respective vessels with blood, and that this periodicity is owing to the rhythmical contractions of the heart—in the case of the arteries to the contractions of the ventricles, and in the case of the veins to the contractions of the auricles. Whilst, however, the arterial pulse is owing to the forcible propulsion of blood from the ventricles into the arteries, the venous pulse is owing merely to a regurgitation of blood into the veins at the time of the contraction of the auricles.

As the venous pulse depends on the contraction of the auricle, and the arterial pulse on the contraction of the ventricle, the venous pulse and the arterial pulse are consequently not synchronous.

My third subject of preparatory inquiry is as to whether pulsation attends the rhythmical contractions of the walls of the veins of the bat's wing, and the acceleration of the flow of blood in those vessels thereby occasioned.

Though their walls contract rhythmically, the veins of the bat's wing do not pulsate. Of this I am assured by observing that the rhythmical contractions of the walls of those vessels in accelerating the circulation do not cause any sudden distension with blood of that section of the vein in which the flow is accelerated, such as would indicate to the eye that anything like a pulsation capable of being felt with the finger, supposing the vein large enough to be touched, could be the result. In large frugivorous bats, the veins are indeed large enough to be felt, but, on pressing one between my fingers, I did not perceive any pulsation, properly so called.

Conditions such as those on which pulsation, like that of the arteries, depends, do not exist in the case of the veins of the bat's wing. The stream of blood in veins being from branches to trunk, from narrower to wider channels, the veins in the bat's wing do not become suddenly distended with blood—the wider veins with the blood propelled into them by the rhythmical contractions of the walls of the narrower veins.

The effect of the rhythmical contractions of the walls of the veins, then, is merely rhythmical acceleration of the stream of blood, its general onward flow being still maintained, as in veins not possessed of rhythmical contractility, by the *vis a tergo* dependent on the heart's action.

I now come to the proper subject of this paper, which is, a description of the phenomena attending the propulsion of lymph from a lymphatic heart into the vein into which it opens; with an inquiry as to whether pulsation of the vein is produced by the propulsion of the lymph into it,

such as we have seen to attend the propulsion of blood from the heart into the aorta and its ramifications.

The only lymphatic hearts, the propulsion of lymph from which into their corresponding veins it has been as yet possible to observe taking place, are the lymphatic heart in the tail of the eel, and the anterior lymphatic hearts of the frog. The observation in both cases requires to be made under the microscope, though a low power is sufficient.

To speak first of the phenomena attending the propulsion of lymph from the lymphatic heart in the tail of the eel into the caudal vein.

The caudal venous trunk is formed by the inosculation of two trunklets, into the smaller of which it is that the lymphatic heart opens by a short duct near the junction.

By the contraction of the heart the lymph is so forcibly propelled into this venous trunklet, that the stream of blood in it is interrupted by the lymph-stream cutting through it. Colourless lymph thus wholly replaces the red blood as far as the caudal trunk, and in this vein itself the lymph-stream so far displaces the blood-stream entering it by its larger tributary trunklet as to occupy one side of the interior of the vessel for some distance in its course, until the blood and the lymph both at last become mingled.

During the diastole or relaxation of the lymphatic heart, the stream of lymph into the smaller tributary venous trunklet intermitting, the flow of blood in that vessel to the trunk of the caudal vein is resumed. Systole of the lymphatic heart, however, quickly ensuing, the stream of lymph again cuts through the blood-stream, and drives before it into the caudal venous trunk the small quantity of blood which had entered the tributary venous trunklet during the diastole of the lymphatic heart.

We have thus presented to our observation the phenomenon of small drops of blood or agglomerations of red corpuscles propelled in rapid succession, synchronously with the systole of the heart, in the colourless lymph stream occupying one side of the caudal venous trunk for some distance onwards, and looking, at first glance, as if they emanated from the lymphatic heart. That the drops of red blood did actually issue from the caudal heart was supposed by the late Dr. Marshall Hall, who discovered the organ. Under this erroneous impression, Dr. Marshall Hall, therefore, described the caudal lymphatic heart of the eel as an auxiliary blood-heart.

By my discovery of the true nature of the phenomenon, the caudal heart of the eel was proved to be a lymphatic heart.[1]

The intermittent propulsion, by the mechanism and in the manner I have described, of small drops of blood or agglomerations of red corpuscles into and along the caudal vein on the side occupied by the lymph

[1] The Caudal Heart of the Eel a Lymphatic Heart, etc., *Philosophical Transactions*, 1868.

stream, gives the appearance at first sight as if the vein itself pulsated, but a little attentive observation is sufficient to satisfy us that the vein really does not pulsate. A little consideration also will lead us to perceive that the conditions under which the propulsion of the lymph into the vein takes place are not such as to permit of pulsation of the vessel. The vein, increasing in width in its course, cannot be distended by the lymph propelled into it at each systole of the caudal heart, as I have before argued.

Before my discovery of the true nature of the phenomena attending the propulsion of lymph from the lymphatic heart in the tail of the eel into the caudal vein, and the conclusive confirmation thereby afforded, that the caudal heart of the eel is really a lymphatic heart, nothing but contradiction prevailed on the subject. Similar contradiction prevails, I believe, at the present time respecting the veins into which the anterior lymphatic hearts of the frog open, and the phenomena attending the propulsion of lymph from the hearts into those veins. And this notwithstanding that I explained the whole subject-matter many years ago.

The demonstration of the veins into which the anterior lymphatic hearts of the frog really open, and the explanation of the phenomena attending the action of the heart, and the propulsion of lymph from them into the veins, to which I come in the last place, constitute the main object of this paper; and all the observations I have before made, were intended to prepare for the better elucidation of the subject to which I now beg to draw attention.

A frog being rendered insensible, its thoraco-abdominal cavity laid completely open, and the viscera—both thoracic and abdominal—pushed to one side, we can on looking into the side thus emptied—the left for example—and directing attention to the niche behind and below the extremity of the large transverse process of the third dorsal vertebra, observe the systole and diastole of the posterior part of the anterior lymphatic heart of the side under examination.

This observation may be made with the naked eye, but in order to see the stream of lymph entering the vein, into which it is propelled by the heart, it is necessary to examine the part under the microscope. And for this purpose, the skin of the back of the frog from over the scapular region requires to be removed in order to allow the transmission of light.[1]

The vein into which the lymph is propelled lies at the posterior margin of the heart, near the large transverse process of the third dorsal vertebra already mentioned.

As the caudal heart of the eel opens into its vein by a short duct, so also does the anterior lymphatic heart of the frog open into its vein by a short duct. In neither case does the vein itself directly issue from the heart.

[1] Sometimes by the removal of the skin lymphatic spaces are opened into, and air may be drawn therefrom into the lymphatic heart—an accident which at once arrests the action of the heart and renders the experiment fruitless.

Viewing, then, the parts from the inside of the thorax with a simple lens of half an inch focus, we observe that when the lymphatic heart contracts, the lymph-stream propelled into the vein sweeps before it the blood in that vessel whilst the flow of blood in it from behind is arrested. At this moment, the lymph fills the whole of that part of the vein into which the heart-duct opens, so that the vessel appears at the place quite colourless. As soon, however, as diastole of the lymphatic heart supervenes, the flow of blood from behind becoming re-established, the lymph filling the vein at the place is, in its turn, driven onwards, though with less force than that with which it had, by its propulsion from the heart, swept the blood before it, while the vein becoming refilled with blood appears red.

Systole of the lymphatic heart now again ensuing, the lymph-stream thereby propelled into the vein sweeps forward the blood in that vessel as before, whilst the flow of blood from behind is arrested, and thus the same series of phenomena is repeated.

The propulsion of lymph from the anterior lymphatic hearts of the frog into the veins into which they open, the phenomena attending which I have now described, causes *no distension*, and, consequently, *no pulsation* of the veins any more than we have seen to be the case with regard to the propulsion of the lymph from the caudal heart of the eel into the caudal vein. We have seen how the apparent propulsion of drops of red blood from the caudal heart of the eel misled Dr. Marshall Hall into the supposition that the caudal heart of the eel is an auxiliary blood heart. Connected with the action of the anterior lymphatic hearts of the frog, there is a different but an equally misleading phenomenon, which consists in movements, synchronous with the systole and diastole of the hearts, exhibited by a large jugular vein (blackish from the quantity of pigment cells in its outer coat) in the neck on either side, which appears as if to issue from the lymphatic hearts anteriorly. This vein was first observed by the late Dr. Marshall Hall, who mistook it for an artery endowed with rhythmical contractility. Subsequently Johannes Müller, the late distinguished Professor of Anatomy and Physiology in Berlin, discovered the anterior lymphatic hearts, but erroneously supposing that the large black vein in the neck, on either side, I am speaking of, actually issues from the heart, he considered the movements of the vein as pulsations produced by the propulsion of the lymph from the lymphatic heart into it—the vein becoming turgid, as he thought, each time the heart contracted.

I have, however, shown, as already explained, by direct observation, that the anterior lymphatic heart of the frog pours its lymph by a short duct into a vein at its posterior border, and that no turgidity or pulsation of the vessel is thereby produced. Nevertheless, the vein in question, though it does not issue from the lymphatic heart, exhibits movements synchronous with the systole and diastole of it. The question, therefore, presents itself: What is the character of these movements?

If we watch the phenomenon carefully, we observe that at each systole of the lymphatic heart, the vein is drawn backwards as a whole, and that at each diastole the vein retracts into its former position. This rhythmical backward and forward movement of the vein longways is evidently owing to its being closely bound to the anterior part of the heart so as to be dragged by it in its contractions. The nature of the bond of connection appears to be this: The lymphatic heart is embraced anteriorly by the veins, which by their inosculation form the trunk in question, viz., on the outer border several small veins which are bound to the heart by its capsule of cellular tissue; and on the inner border, a large vein which is a continuation upwards and behind the large transverse process of the third dorsal vertebra of that vein into which the lymphatic heart really propels the lymph in the manner I have described. And now, in conclusion, let me express the hope that I have made it clear to demonstration: 1st, that the movements exhibited by the jugular vein of the frog, on either side, though synchronous with the action of the anterior lymphatic heart, are not pulsations produced by the propulsion of lymph into it, and that, in fact, the heart does not open into the said vein at all; and 2dly, that the vein into which the lymph is really pumped is seated within the thorax at the posterior border of the heart, and that the propulsion of the lymph into it causes no distension, and consequently no pulsation.

ARTICLE VII.

EMPYEMA AND ITS TREATMENT.[1] By F. E. MARTINDALE, A.M., M.D., of Port Richmond, N. Y., Consulting Surgeon to the Child's Nursery and Hospital, Port Richmond.

I DO not propose in the following paper to analyze the several factors that enter into the causation of empyema as a grave pathological condition, nor advance any new theory as to why pus should at any time be effused into the pleura rather than serum or lymph, during the course of an exceptionally severe pleuritis. It is enough for us to know, for the purpose hereinafter set forth, that such is the case, and that when it is, operative measures become an absolute necessity in the interest of the patient and his permanent recovery.

I purpose, however, viewing this pathological condition, or result, solely in connection with the several operative methods that have been proposed for its radical treatment in the past, and to illustrate, by a case in point, that method alone, which to my mind seems entitled to be regarded as a

[1] A paper read before the Richmond County Medical Society, New York, May 4, 1881.

positively radical treatment, and which in a large majority of cases promises an absolute and certain recovery to those operated upon.

The genesis of these or co-ordinate measures for the removal of effusions from within the thoracic walls dates back even to the time of Hippocrates. It may reasonably be presumed that accumulations of pus within the pleura were evacuated spontaneously in individual cases, then as now, and that where there were external evidences of its presence as shown by localized inflammations and pointing, the ancient surgeons incised the supposed abscess and thus, imperfectly no doubt, evacuated the contents of the pleura; in fact, there can be no question as to this operation having been occasionally performed during the time of Galen with more or less favourable results. At a much later period we learn that as physicians became more and more distinctly separated from surgeons, the spirit of opposition to operative interference arose, and this antagonism between the two branches of the profession may be recognized, even to as late a date as the year 1836, by reference to the Transactions of the Paris Academy, on that subject, for that year. In fact, it has only been in quite modern times that clear indications have been recognized, and precise methods adopted for operative interference in these cases, as exemplified in the more modern application of aspiration to their treatment.

This latter method was, for a considerable length of time, regarded as the *ne plus ultra* of surgical resource, and one that guaranteed more successful results in the removal of the purulent contents of the pleura than had before been obtained, but it failed in this, that it did not do it effectually enough to alter or modify the process of the conversion of lymph into pus by the secreting membrane of the pleura, and hence its present disuse in those cases. Laennec, Trousseau, Reybard, and still later Marrote, well known as advanced thinkers among the leading French physicians of their day, did not hesitate to advise and practise the method of puncturing pleuritic effusions whatever their character, as can be seen by reference to papers published in the Bulletin of the Academy of Med., Paris, 1846, and the Transactions of the Society of the Hospitals of Paris, 1864. Trousseau regarded the operation for paracentesis as an exceedingly grave one even in sero-fibrinous effusions, and declares it should be had recourse to only "when there is danger to life from immediate suffocation, or when the effusion is very large;" Marrote, in the paper read before the Society of the Hospitals of Paris, '64, and just referred to, is the first to make a clear distinction between the treatment of sero-fibrinous and purulent effusions, and declares "that the radical operation of incision is the only one in purulent effusions that is at all likely to lead to a cure." Bowditch was undoubtedly the first to introduce aspiration into practice as a reliable therapeutic agent, and a paper published by him in the *American Journal of the Medical Sciences*, as early as 1852, advises its application to all thoracic effusions, and in a later one, published in the same Journal in

1864, denies that any ill results are likely to follow, or that purulent effusions cannot be effectually withdrawn through the capillary tubes provided for that operation. Fraentzel, an eminent German author, however, in his article on "Pleuritis," in Ziemssen's Cyclopædia, declares that "they would certainly give the preference to the new method of operating by single incision, with canula, and washing the pleura, who have seen as I have, as many as eighteen cases, in which the then radical operation by aspiration had been performed, with only two recoveries, and one of these after a tedious course of a year and three-quarters with serious deformity of the whole thorax." It will thus be seen that the operative treatment for purulent effusions is essentially different from that for sero-fibrinous, and the sooner after the diagnosis has been rendered positive by the aid of the hypodermic syringe, the purulent contents of the pleura are thoroughly evacuated, the greater certainty will there be of a favourable result. By reference to the "Guy's Hospital Reports" of 1877, with respect to the treatment of empyema, we learn from Dr. Goodhart's tabular analysis of 77 cases that fifteen were subjected to no operative treatment; of which two only, both children, aged five and two and a-half years, recovered; in eleven of the remainder the empyema pointed and discharged spontaneously, or was incised; of these, only two made good recoveries, the remainder under the radical method of treatment got well.

Drs. Barlow and Parker, in their notes on "Pleuritic Effusions in Childhood," observe with respect to spontaneous evacuation by external opening that "our experience does not supply us with a single good result." In my own practice, the single incision without drainage or washing has been successful in the case of a young patient aged five years, who is now living and in good health four years after the operation.

Of the few cases that have been operated upon among adults within the limits of my own knowledge and that of most of my medical acquaintances in Richmond County, or that have discharged spontaneously under their medical supervision, not one, so far as I can learn, made a permanent recovery. The great mortality resulting from the method by aspiration, and in fact from that by single incision as well, without antiseptic treatment, has undoubtedly been largely due, 1st, to the decomposing influence of infected air upon the purulent contents of the pleura; 2d, to failure in thoroughly evacuating these contents; and 3d, the non-use of strong carbolized spray (1 to 40) at the subsequent dressings, as well as during the operation. Powell, in his "Treatise on Consumption and Diseases of the Lungs," 1878, in referring to the operative treatment then recommended for empyema, observes, page 244: "As it is clear that we cannot empty the pleura even in recent cases without admitting air in place of fluid, we must adopt one of three methods: 1st, either to disinfect the air admitted into the pleura and having inserted a canula to close the wound with antiseptic dressings, to be renewed with the same precautions every three or

four days; or 2d, to make a double opening and introduce a drainage-tube, so as to permit the escape of pus as rapidly as formed; or 3d, to make a single incision or free opening, and insert a tube through which the pleura can be daily washed out with some disinfecting fluid." Of the three methods he says the first is to be preferred.

Dr. Gross in his "System of Surgery," in referring to the fact of the drainage-tube having lately been recommended, for the treatment of empyema, says, "it should not be encouraged, as it is both harsh and dangerous."

From the foregoing, it can readily be seen that a great diversity of opinions has, even within recent years, been entertained, as well as a variety of operative methods adopted, for emptying the contents of the pleura in the formidable complication of pleuritis we are now considering. The one great object sought has been to secure this result without the admission of air into the pleural cavity, or if this could not be avoided, then to so deprive it of its infecting qualities as to render it practically harmless. In fact, the fears of early operators, of the probable fatal effects of air reaching the cavity of the pleura, led them to perform the operation by single incision, for empyema, in a warm bath, that water rather than air should replace the pus evacuated. Setting aside the possibility of collapse, or paralysis of the heart, from this method, it is difficult to perceive what possible benefit could accrue from the substitution.

The following interesting case will show the results of two operations for the radical relief of empyema, the first being the introduction of the canula and application of the siphon, which failed, and the other by the anterior and posterior incisions and drainage-tube, as follows:—

Frank F., aged 20 years, came under my observation on the 4th of February last. His history developed the fact of his mother having died of "lung trouble," presumably "caseous pneumonia," also a sister of phthisis. Had been ailing for a week, supposed to be with a bad cold. Temperature taken at date of visit registered 106°; pulse 130; respirations 50. The physical signs indicated pleuro-pneumonia of the left side. The usual treatment was adopted, and, it being absolutely necessary to allay the intense pain, a hypodermic injection of morphia was administered.

Feb. 8th. Patient since last record has suffered severely with pain and dyspnœa when not fully under the influence of morphia. General appearance distressed. Pulse rapid and feeble. Temperature 104°. Respiration purely costal. Expectoration viscid, and of the brickdust variety. Physical signs presented dulness throughout the left side to mid-sternum. Heart's apex beneath the left border of the sternum. Tubular breathing heard in scapular and clavicular regions. There was clearly considerable effusion of some kind in the left pleural sac, but no diaphoresis had as yet led me to suspect the existence of pus. Very little change in the character of the symptoms occurred, if we may except a slight fall in the temperature and a gradual subsidence of the pain and dyspnœa up to the 12th of February, when the thermometer registered 102°, pulse 120, and respirations 46. At this date the dulness extended to near the lower border of the clavicle, the patient being restless and despondent.

On the 20th, I introduced a hypodermic needle into the pleura, and withdrew a portion of its contents, which proved to be of a sero-purulent character; but, to render the diagnosis a positive one, I took the fluid to my colleague, Dr. Wm. C. Walser, to verify it by a microscopical examination if it were correct, and through his kindness, demonstrated unequivocally the presence of pus globules, and the certainty of the case being one of empyema. The temperature at this date ranged from 100.5° in the morning to 102.5° in the evening. Pulse from 110 to 130. Respiration 46. Heart's apex beneath the sternum, and dulness extending to above the clavicle. Decubitus on the right side. Patient gradually emaciating, and his appetite failing, I resolved on the 27th Feb. to puncture the pleura, and accordingly, Dr. E. D. Coonley being present and assisting, I performed paracentesis, and applying the siphon, previously filled with water, and immersed at its lower extremity in the same liquid, withdrew about a pint of pus, when, it ceasing to flow, we were obliged to desist, and the canula was withdrawn, carbolized cotton being applied over the point of puncture. Very slight variations either of temperature, pulse, or respiration, occurred from this date to March 6th. There were moderate night-sweats, and well-marked hectic. The heart was now beating about two inches to the right of the sternum. Comparative measurements of right and left side showed an increase of two inches in favour of the left. Intercostal spaces obliterated, and a view of the patient anteriorly or posteriorly shows the whole of the left side of the thorax bulging. I now decided to perform one of the three radical operations suggested by Powell for the removal of the purulent contents of the pleura, and, it appearing to me that the one that would afford the fullest and freest exit to the contained matter gave promise of the best results, I decided upon the operation by anterior and posterior incisions and the drainage-tube, under a full stream of carbolized spray. Accordingly, on the 8th of March, 2 o'clock P.M., Drs. Wm. C. Walser and E. D. Coonley being present and assisting, and without the use of anæsthetics, save freezing the point of incision, I introduced a scalpel through the intercostal space between the fifth and sixth ribs, about two inches to the left of the nipple, and withdrawing it enlarged the opening with a probe-pointed bistoury to three-quarters of an inch, or sufficiently, at all events, to permit of the ready introduction of the drainage-tube. A full stream of pus being discharged with some force was, after a minute or two, checked by the fingers, and brandy freely administered to the patient, when the operation was resumed by introducing through the wound thus made a long and slightly curved sound, having a small knob on the end, which was carried downwards and backwards to as low a point in the pleura posteriorly as could be reached, and, so manipulating it that the knob of the sound could be distinctly felt in an intercostal space on the back, an incision was made to meet it. This being accomplished, and the opening enlarged as before, the end of the sound was passed through, and about half a yard of drainage tubing, previously rendered antiseptic, and provided with holes cut midway between each extremity, was slipped over the knob and withdrawn with the sound through the two incisions, and the two ends finally tied together outside. This completed the operation, and, after about five pints of pus had thus been withdrawn, the chest was carefully sponged with carbolized water, a sheet of carbolized cotton applied to the entire side, this covered with eight thicknesses of antiseptic gauze, and all held in place with antiseptic

gauze rollers, the patient clothed and replaced in bed, and stimulants administered *pro re nata*.

The relief afforded by the withdrawal of this large accumulation of pus, and the consequent removal of pressure upon the heart and right lung, was immediate and effective. The evening temperature after the operation registered 100°; pulse 96; respirations 36.

An opiate being administered the patient slept well. From this date to the 11th, when the dressings were renewed, the lowest record of temperature was 99°; pulse 92; respirations 36. On the morning of the 11th he complained of some pain, and had passed a rather restless night, his temperature then registering 101°. The application of fresh dressings under the carbolized spray again brought down the temperature to 98.5°. The dressings removed, as also the bedding, were thoroughly saturated with pus, of which a large quantity drained away during the operation of cleansing. The heart was now beating to the left of the sternum, but not in its normal position. Percussion note tympanitic anteriorly to eighth rib. Slight vesicular breathing heard in the supra-scapular region. Some cough, more particularly at night. Quinia, iron, and cod-liver oil are administered with stimulants, under the use of which the patient's appetite rapidly improves. On the 15th the dressings were again removed, and found as thoroughly saturated as on the last occasion. The same care was exercised in cleansing the wounds, tube, and the patient's body, and in their reapplication as before. The lowest record of temperature since the 11th has been 98° on the 13th; pulse 84; respirations 28.

The emaciation of the patient is now quite marked, and a small bedsore is discovered just above the articulation of the last lumbar vertebra with the sacrum, which is dressed with flexible collodion and tannate of glycerine. Appetite good, and sleeps well under an opium pill. The left wall of the thorax is now sunken, and the percussion note anteriorly less clear than before. Temperature before dressings are reapplied is 99°; pulse 92; respirations 30.

March 23. Temperature since last record has remained daily at 98.5°; pulse varying from 82 to 96, and respirations when at rest 26 to 36. Dressings renewed with comparatively slight drainage. A very painful abscess forming in right gluteal region; appetite, however, excellent. A constipated condition of the bowels complained of, which is relieved only by active cathartics.

28*th*. Dressings renewed. Very slight drainage. Abscess in thigh has discharged spontaneously, with but temporary relief to the pain and immobility of the right leg, as another and larger is forming two inches below. The question arises here, are these the result of local irritation from purulent matters in contact with an abraded surface, or the establishment of metastatic foci of inflammation from absorption of pus into the circulation under strong pressure upon the pleural walls?

We find that for some time back the emaciation of the patient has been gradually becoming more and more marked, until the bones of the pelvis and vertebræ now present an appearance of extreme prominence, which threatens grave possibilities in connection with the decubitus, which is now on the left side. Why, under these conditions, should abscesses have formed on the *right hip* rather than the *left*, assuming the local irritation to have been excentric? Before the final operation the decubitus was on

the right side, and consequently the local irritation also, and purulent absorption, if it occurred at all, must have occurred then; but up to that date, and some weeks later, there were no evidences of cellular infiltration in the right hip; some three weeks after the operation, however, when all the purulent contents of the pleura had been thoroughly evacuated, the decubitus being then on the *left* side, acute localized inflammation is set up in the cellular tissue of the *right* hip, and two abscesses follow one after the other. It would seem in this case that the local irritation was applied chiefly to the side opposite that affected.

Heart is now occupying a position to the left of the sternum, but somewhat above its natural position. Percussion note less tympanitic anteriorly, and weak vesicular breathing heard posteriorly to near the lower margin of scapula. General appearance improved. Sleeps now without anodyne or hypnotic. Temperature 98.5°; pulse 86; respirations 26. *April* 4. Dressings renewed, no drainage. Tubing withdrawn and replaced by a horsehair seton eight strands, previously rendered antiseptic. Remaining abscess on thigh lanced, and a large quantity of pus evacuated, and cavity afterward carefully syringed with warm carbolized water. Bed-sore entirely healed. Patient is up and able to walk across his bed-room without assistance. Temperature, pulse, and respirations same as previous record. 12*th*. Dressings reapplied, and found slightly soiled with discharge. Patient rode two or three miles with me yesterday, with great satisfaction. Eats heartily and sleeps soundly. No cough. Temperature, pulse, and respirations same as last record. Three strands of the seton removed. 19*th*. Dressings reapplied, those removed slightly soiled with pus. Three more strands of the seton removed. Rode out with me again on Sunday, 17th, with renewed health and strength; weighed yesterday, 18th, and finds a loss of ten pounds on his weight taken just before his illness; his normal weight being 116 pounds, and his weight, as taken on the 18th, being 106 pounds. Judging from his appearance, as presented at or soon after the last operation, and at the last dressing on the 26th of April, there must have been a gain of at least ten or twelve pounds. His chest measurements, as taken on that date, are, circumference, 28½ inches; from median line of sternum to spinous process of vertebra on the plane of the two nipples, left side 13½ inches, right side 15 inches; from crest of ilium to tip of acromion process, left side 13½ inches, right side 16 inches. The calibre of the left half of the thorax, it may thus be seen, is considerably reduced, the ribs approximating, and the shoulder drooping as in Pott's disease.

The remaining strands of the seton were now withdrawn, the discharge of pus being so slight as to suggest the probability of its being due entirely to the presence of the seton itself. The patient's general health is now good, and he daily indulges in out-door exercise, principally on foot, and has added two pounds to his weight since the last dressing a week ago. His temperature taken at this date registered 98.5°; pulse 86; respirations 30. No visits were made from April 26 to May 4, the young man being out visiting, or engaged in some other equally agreeable occupation the greater part of the time. On the latter date the dressings were removed, and both the anterior and posterior wounds found entirely healed. The bandages not being reapplied, a porous buckskin under-shirt was ordered to be worn next the skin, and flannel over this. His weight

shows a net gain of four pounds since last dressing. Breathing sound distinct in both scapular and clavicular regions. Temperature 98.5°; pulse 80; respirations 28. Returned to his business May 1.

The anatomical results consequent upon the gradual withdrawal of so large a quantity of purulent fluid from the cavity of the pleura naturally suggest the inquiry as to the cause of this retraction of the chest-walls, and the present relations of the two pleural surfaces in this case. We cannot attribute the former, as some authors have done, to atmospheric pressure, for we have had a perfect equilibrium of atmospheric pressure here since the operation. What, then, has led to the results as stated? The question can better be answered by entering into the consideration of the latter inquiry as to the present relations of the two pleural surfaces. The lung under the pressure of the large effusion into the pleura has been pushed back against the vertebral column, and adhesions have taken place, which, upon the withdrawal of this fluid, prevent its responding fully to the inspiratory effort. A large cavity remained, which nature at once set to work to fill, not with pus or serum, but with rapidly formed granulations upon both surfaces, which becoming aggregated and organized, until finally condensed into a firm living tissue, binds them permanently together, and constitutes the only retracting power that in this has diminished the calibre of the left side of the thorax in every direction, as shown by the measurements already given. We have now a condition present in which auscultation and percussion are practically of but little value in affording us information as to the breathing capacity of the but recently compressed lung. The general indications, however, lead us to the conclusion that a moderate expansion has already taken place, and that this is likely to prove a progressive one under the influence of a regular application of calisthenic rules for chest-development, that will eventually expand the left wall of the thorax at least one-half, and increase its measurements to a degree more nearly approximating the normal.

This case has demanded constant care, unceasing attention, and inexhaustible patience, but the result has freely repaid both the labour expended and the care bestowed in the satisfaction afforded by the knowledge of our having been instrumental in saving a human life that without such aid must inevitably have perished, and the sense of having done our entire duty.

ARTICLE VIII.

A STUDY OF PRIMARY, IMMEDIATE, OR DIRECT HEMORRHAGE INTO THE VENTRICLES OF THE BRAIN.

By EDWARD SANDERS, M.D., late House Physician, Bellevue Hospital, New York; Attending Physician to Mt. Sinai Hospital Dispensary, Department of Internal Diseases.

INTRA-CRANIAL hemorrhages are of two general varieties: the extra-encephalic, or that in which the effusion of blood takes place within the cranial cavity but external to the brain,—the meningeal; and the encephalic proper, or that form in which the extravasation involves some portion of the encephalic mass. This latter variety may be further subdivided into the interstitial encephalic, or that in which the effusion takes place into some part of the brain substance; and the intra-ventricular encephalic, or that in which the blood is poured out into one or several of the ventricles of the brain. Generally speaking, this ventricular form is of two kinds: the primary, immediate or direct, occurring without previous laceration of the ventricular parietes; and the secondary, mediate or indirect, or that which follows laceration or influx of blood from some other point, the primary seat of the hemorrhage being external to these cavities. Specifically speaking, therefore, only such cases are to be considered as truly intra-ventricular in which the point of origin of the hemorrhage exists within the ventricles themselves, or is seated at some point in the superficies of their walls, and occur independent of any previous laceration of the brain substance or of the entry of blood from without. It is with this last form of intra-ventricular hemorrhage that I am about to deal. This subject, although not an original one, may still be considered to have a certain degree of newness or freshness about it in that its extended study has, as far as I have been able to determine after a very extended search through the medical literature at my command, not yet been undertaken. In its discussion I shall rely almost entirely on facts, remembering that "medicine needs more fact and less theory" (Hartshorne, *Essentials of Med.*, Phila., 1874, p. 21), theories and theorizing being avoided, except in a few instances, as far as a strict regard to clearness and completeness will permit.

Interstitial encephalic, or what is commonly, though inaccurately, known as cerebral hemorrhage, has long since taken its place among the recognized diseases of the cranial mass, while of late years the occurrence of the extra-encephalic or meningeal form has in its turn been firmly established.

The existence of immediate ventricular hemorrhage has been tacitly admitted as a fact, but seemingly none have attempted its verification. Occasional cases of it have been reported as such, generally as mere curiosities and without comment; but as far as I am able to determine, no

elaborate article has, in all the wide range of medical literature, been devoted to its separate and exclusive discussion. We all know and admit that intra-pleural, intra-pericardial, intra-peritoneal, tunica vaginal and meningeal, both cerebral and spinal, hemorrhages without involvement of the underlying organs or structures may, do, and have been positively proved to occur. While tacitly admitting that effusion into the ventricles of the brain may take place, how few have taken the trouble to verify it, granting that such was the case by receiving as a truth what they cared not or willed not to prove.

Up to within a comparatively few years meningeal hemorrhage seems to have been almost unknown, whereas of late years it has been erected into the dignity of a distinct and well-recognized disease, having its own etiology, pathology, and symptomatology, and no work on general medicine is now considered complete whose pages do not contain a description of it. The same may be said of hemorrhages directly into other serous sacs. Most of the recent elaborate treatises on medicine and surgery, such as Reynolds, Ziemssen, Erichsen, Holmes, etc., discuss these diseases as clinical entities which can be diagnosed and must be treated. As might be shown in a discussion of the anatomy of the ventricles of the brain, a more or less perfect analogy exists between them and the cavities we have just mentioned. Strange as it may seem, though important as the subject undoubtedly is, at least so I consider it, primary intra-ventricular hemorrhage is either passed by unnoticed, or if noticed, receives a passing mention only, being characterized as very rare, unimportant, and not to be diagnosed (Nothnagel, Hughlings Jackson, Bricheteau, and many others). Here we have a series of intercommunicating cavities or spaces seated in the midst of the most important organ of the body; yet in spite of their great importance, their diseases are passed by almost in silence, and their hemorrhages, which I believe to be their most common disease, even more so than primary inflammatory conditions of their walls, are not deemed worthy of more than a passing, indefinite allusion. I am willing to assert that there has been no subject in the whole field of medicine which has received, of late years, more careful attention, more close observation; none which has been more worked upon and elaborated, than that of hemorrhage into the substance of the brain. Yet the fact that extravasation of blood into its ventricles, independent of laceration of its tissue, does take place, is, as a rule, as before stated, passed by in silence, or its occurrence is merely noted without comment. Like many other diseases that were formerly classified as very uncommon, but have by later research and observation been found more frequently present by merely being looked for, primary hemorrhage into the ventricles of the brain when sought for in the post-mortem room will, I am sure, share a like fate.

Among the earlier writers on medicine the ventricles of the brain seem

to have played a very important rôle in the explanation of the various diseased conditions of their cerebral pathology, more especially apoplexy. Thus, Avicenna was of the opinion that apoplexy arose from the interference with the passage of the sensitive or motor spirit (?) outwards from or inwards to the brain, depending on a sanguineous or phlegmatic (?) humour effused suddenly into the ventricles (liv. iii., feu. i. tract. 5). Bonet mentions instances of blood found in the ventricles in a fluid or coagulated form, and also refers to lesions or ruptures of the choroid plexuses. De Haen, Hufeland, Wepfer, Bartholin, and Fernel are among those who have blamed ruptures of the choroid plexuses as the immediate cause of extravasations of blood into the lateral ventricles. Lieutaud describes similar conditions, and gives a case of ventricular hemorrhage quoted from De Haen. Targione, as quoted by Morgagni, affirms that "in most who die of apoplexies, we see extravasations of blood in the ventricles." Morgagni himself would seem to believe, and with him many of the writers of his time, that cerebral hemorrhage or apoplexy was frequently due to rupture of one of the vessels of the choroid plexus, for we find him frequently blaming these processes as the source from which the blood was derived, the seat of the extravasation being placed in the lateral ventricles; in fact, to account for the presence of the blood in the ventricles in the cases he relates, the choroid plexus is almost uniformly blamed. Cheyne (The English Malady; or A Treatise of Nervous Disorders of all Kinds, Lond. 1733, p. 169) makes the following remark: "As to the immediate cause of the apoplectic fit, I think it must be one of these, viz., either a rupture of the bloodvessels in the brain, whereby a great quantity of blood being extravasated upon its including membranes, or into its cavities, presses upon the origin of the nerves, so as to intercept their operations and functions." We find Rochoux (Recherches sur l'Apoplexie, Paris, 1814, pp. 43 et 182) quoting two cases of ventricular hemorrhage, one of which he admits as primary while calling in question the probability of the other. This former case is recorded by Verattus, and is interesting in several respects as being one of the earliest carefully observed cases of this kind, and as being besides a pathological curiosity.

CASE 1. *Exhalation of Blood into the Left Ventricle of the Brain, simulating Apoplexy.*—A woman, aged fifty years, of a very healthy appearance, was suddenly seized with an attack of apoplexy, against which all remedies having proved useless, fever set in on the third day, and death occurred on the fifth. During the entire duration of the malady the respiration had been very shallow and slow, but still regular.

In opening the skull, the vessels of the cerebrum and cerebellum appeared distended by a large quantity of blood. The anterior portion of the left ventricle was filled throughout by blood in part fluid, in part coagulated. Otherwise there was nothing observable in the cavity itself, nor in the right ventricle; but much surprise was felt on finding in the centre of the clot of blood a small mass of curled and twisted hair, the hairs being intertwined and rolled up into a ball. It was as large as a pea, and although the hairs of which it was composed were very fine, they could be easily recognized as such both by the unaided eye and the microscope. By the latter no hair-bulb, which might have served as root, was discov-

erable; since they, for the most part at least, terminated at both ends in a point. They contained in their meshes some very small white corpuscles, of variable shape, of which Verattus, Beccarius, and some others who examined them did not know the nature. (Observation xlvi., extracted from Verattus; Comm. de Bonen. Scienc. Acad. pag. 185 by Rochoux, Recherches sur l'Apoplexie, Paris, 1814, p. 182.)

Whether or no this was a case of hemorrhage into a dermoid cyst of the ventricle is, of course, impossible positively to decide, but the possibility of such an assumption is borne out by an undoubted case of true dermoid cyst in the left lateral ventricle of a boy ten weeks old, recorded by Prof. Rudolph Maier (Virchow's *Archiv*, bd. xx. S. 536); and another which Lebert (Traité d'Anat. Path. Gén. et Spéc., Paris, 1861, tome ii. p. 80) quotes from Menghini, who found in the left lateral ventricle of a female, aged 50 years, a mass of implanted hair of the size of a pea, inclosing within it small pale bodies. Virchow quotes still another case.

Bricheteau (Dict. de Sc. Méd., *Journ. Comp.*, tome xli. 1818, p. 293), although admitting the occurrence of intra-ventricular effusion of blood, urges against making it a separate malady, and considers it very rare and merely a variety of arachnoid extravasation. The hemorrhage, according to him, "takes place by exhalation, the exhalation very probably having its seat in the arachnoid."

Copland (The Causes, Nature, and Treat. of Palsy and Apop., Lond., 1850, p. 120; and Dict. of Pract. Med., Lond., 1858, vol. i. p. 83), and Gintrac (*Gaz. Méd. de Paris*, 3d série, tome xxi., 1866, p. 799; and Cours Théorique et Clinique de Path. Interne et de Thérapie Médicale, tome vi., 1868), also concede the fact that the encephalic ventricles may have their own proper hemorrhages, and point out various sources from which the blood may be derived, but give no details; the latter, however, quoting numerous cases while apparently confounding the primary and secondary forms.

Le Gros Clark (*Brit. Med. Journ.*, vol. ii., 1868, p. 323) admits the existence of a ventricular hemorrhage, but maintains that there is no diagnostic sign characteristic of this special form of extravasation on which dependence can be placed, judging, as he states, by the records of such cases as are at his command. Bristowe (Pract. of Med., Phila. 1876) states that hemorrhage into the ventricles is almost always secondary to extravasation into the brain substance, or to rupture of aneurisms at the base.

Bright (Reports of Med. Cases, vol. ii., 1831), Rilliet et Barthez (Traité de Mal. des Enfants), Gendrin (Traité Philosophique de Méd. Pract., tome iii., Paris, 1838, p. 444 et seq.), Rokitansky (Path. Anat., Syd. Soc. Ed. 1850, vol. iii. p. 388), Tanner (Pract. of Med., Phila. 1870, p. 353), Hughlings Jackson (A System of Med., by J. Russell Reynolds, vol. ii., 2d ed., 1872, p. 522), Grasset (Mal. du Syst. Nerv., Paris, 1879, tome i. p. 580), Key and Retzius (Studien in der Anatomie des Nerven Systems

und des Binde gewebes, Erste Hälfte, Stockholm, 1875), Hammond (A Treat. on the Dis. of the Nerv. Syst., 6th ed., N. Y. 1876, p. 86), Roberts (Pract. of Med., Phila. 1876, p. 833), Ed. Long Fox (The Path. Anat. of the Nervous Centres, Lond. 1874), and Nothnagel (Cyclop. by Ziemssen, vol. xii., N. Y. 1877, p. 89), all concur in the belief that this form of hemorrhage sometimes takes place, but also agree in declaring it very infrequent. Dr. Aitken (Pract. of Med., vol. ii., Phila. 1866, p. 349) remarks that "hemorrhage may arise from the lining membrane of the ventricles, which bleeds so profusely as not only to fill the lateral ventricles, but even to enlarge their cavities. As death in these severe cases is usually sudden, the walls of the ventricles are generally healthy, but in some very few instances the septum lucidum has been found ruptured, and the ventricles have freely communicated. The smaller ventricles are in a very few instances also the seat of apoplectic effusion." Duret (*loc. cit.* p. 42) states that in his experiments he has met with clots of blood or fluid blood filling the ventricular cavities. Thus he says, "we saw one small clot, which closed the aqueduct of Sylvius, and another at the opening of the central canal. Such clots are the result of ruptures of the arteries or the veins of the choroid plexus, as we have several times shown, or they arise from small hemorrhagic foci in the floor of the fourth ventricle."

Primary intra-ventricular hemorrhage may, therefore, the weight of testimony being preponderatingly in this direction, and as shown by the many cases I have been able to collect, be considered as established, and its various modifying conditions and circumstances now remain to be shown.

Frequency and Seat.—Intra-ventricular hemorrhage, as before stated, is naturally divisible into that which is primary, immediate or direct; and that which is secondary, mediate or indirect. For comparative purposes we will first glance at the frequency of occurrence of secondary cases, or those consecutive to extravasation at some other point in the cranial cavity than the ventricles.

According to Hammond (*loc. cit.* p. 89), this accident occurs in about one-half of all cases of cerebral hemorrhage, but this estimate is far too high, as shown by the following figures:—

	Total cases.	Rupturing into ventricles.
Andral	10	1
Gintrac	560	46
Rochoux	19	8
Durand-Fardel	139	66
	728	121

or about one case in every six. Now hemorrhage being more frequent in the right than in the left half of the brain, it is to be presumed, although I have not been able to find any statistics bearing upon this subject, that secondary ventricular extravasation occurs more often on the right than on the left side, especially when we remember that the right corpus stri-

atum and optic thalamus are with greater frequency the seat of hemorrhage than the left—73 right, 63 left (Gintrac, *loc. cit.*); and that it is from these points that secondary ventricular effusion generally occurs. As regards the relative frequency in the various ventricles, I can only state that the preponderance is greatly in favour of the lateral. The following figures from Durand-Fardel (*Traité Clin. et Prat. des Mal. des Vieillards*, Paris, 1854) may throw some light on this subject. They have reference to the situations in which the blood was found on *post-mortem* examination and not to the seat of the laceration by which the blood gained entrance into the ventricles:—

	Times.
In all four ventricles	20
In the two lateral ventricles only	23
In one of the lateral ventricles	16
In the third and fourth ventricles	1
In the middle ventricle only	1
In the fourth ventricle only	4
In the fourth and a lateral ventricle	1
	66

Thus we find blood in one or the other of the lateral ventricles 60 times, in the fourth 26 times, and in the third 22 times. The fact that blood was found more commonly in the fourth than the third ventricle may be accounted for by reason of the frequent entrance of extravasated blood from the base through the foramina as will be shown later on.

Now, as regards the frequency of occurrence of immediate intra-ventricular hemorrhage itself, Bricheteau (*loc. cit.* p. 293) says: "It is rare to see an apoplectic extravasation take place primarily into the ventricles of the brain. During ten years' observation in different hospitals, I have met with this condition but twice. Almost always when blood is found extravasated into the cavities, it has passed into them by means of a laceration establishing a communication between them and the primitive *foyer* in the cerebral substance. In the two cases referred to, not the slightest trace of laceration of the ventricular walls was observed." Rochoux (*loc. cit.* p. 196) gives two cases of primary hemorrhage into the lateral ventricles, but as he himself is doubtful about one of them, that of Wepfer, deeming it to be probably of the secondary form, we find but one case among the forty-one of cerebral hemorrhage which he quotes. Rokitansky (*loc. cit.* p. 388) speaking of this condition says: "Hemorrhage into the lateral—not the rupture into the ventricles, which so frequently happens to apoplectic cavities in the corpus striatum and optic thalamus, but hemorrhage from the lining membrane and vessels ramifying near it—is an extremely rare occurrence. I once met with it, as others also have done, in a very large congenital hydrocephalus." Hughlings Jackson (*loc. cit.* p. 522) remarks: "We occasionally find blood in the lateral ventricles. In the vast majority of cases it comes from a rent in the

corpus striatum or thalamus opticus. . . . I have, however, twice known blood effused into the ventricle without injury of the ganglia in its floor." Gintrac has also personally met with but two cases.

From the foregoing quotations we notice that primary intra-ventricular hemorrhage is considered to be very rare, and that reference seems only to be made to that form taking place into the lateral ventricles, the others apparently being lost sight of. Therefore we must necessarily be led to suppose that the other ventricles are in their turn but very seldom the seat of extravasation, even when compared with the lateral ventricles. Aitken (*loc. cit.* p. 349) says: "that in a very few instances the smaller ventricles are also the seat of apoplectic effusion," and quotes a case from Abercrombie. Gendrin (*loc. cit.* p. 447) also admits that extravasation may take place primarily into the third or fourth ventricle without the lateral ventricles containing any blood, but is unable to add any new case, stating that he knows of but a single example of this variety of hemorrhage, this being the one already referred to by Aitken. We may thus judge of the supposed great rarity of this form of the affection; and it must be added that almost all authors who have mentioned this subject agree in considering primary intra-ventricular hemorrhage an extremely rare disease.

The fact that it is believed to be of such great infrequency is partially due to its being overlooked, or not being sought for, and even when found either misunderstood or mistaken for the ordinary variety of cerebral hemorrhage. Thus many of the cases which I have collected, although in most of them there was not the slightest degree of laceration of the ventricular walls, had been reported as ordinary cases of extravasation, and had, therefore, attracted little or no attention. Again, it is probable that many cases where laceration is present, the laceration usually being confined to the non-ganglionic portions of the parietes, and even some where it affected the superficial parts of the ganglia, especially the corpora striata, as in cases by Wilks and Bright, are cases of the variety of cerebral hemorrhage under discussion; the laceration being secondary—not the cause but actually the effect of the pouring out of blood into the ventricular space. In this opinion I am upheld by a number of authorities. Thus in Hutchinson's case, a doubtful one, there existed at many spots of the brain substance of the interior of the cavities lacerations and ecchymoses, "probably due to the effects of pressure and displacement." In Blache's case a similar condition existed. Aitken, Gintrac, and others refer to lacerations of the septum lucidum, following intra-ventricular hemorrhage. Other instances are by Kilgour and Chomel. In my own case there was some tearing and infiltration of the brain substance immediately surrounding the descending cornu on the right side, which was without doubt secondary to the effusion into the corresponding lateral ventricle. But why multiply details when the fact that laceration must occur under the conditions which we are discussing is, as it were, "a self-evident truth"?

—for, given a rapidly increasing, distending effusion into a cavity with lacerable parietes, one of two things must follow: either the fluid will find its way outwards through a natural opening, or it will make one for its escape if none previously exists, or if this be insufficient.

Another condition which caused true ventricular hemorrhage to be overlooked or mistaken for something else, is the escape of blood from within outwards, either, first, by passing through the aperture or foramina connecting the fourth ventricle with the arachnoid cavity; second, by following the course of the choroid plexus and pia mater, and making its exit through the transverse fissure; third, by lacerating the brain tissue, either passing down the cornua, especially the descending, and forcing a passage to the base through the nervous substance, by tearing away the valve of Vieussens, or perhaps by rupturing the floor of the third ventricle and thus reaching the base; or lastly, by tearing through the corpus callosum. The possibility of the first condition can hardly be placed in doubt when we remember the numerous facts, both pathological and experimental, that go to establish it. Hughlings Jackson and Magendie concede it. Key and Retzius have demonstrated it by actual experiment, and pathology proves it; in fact, the latter authors have seen it occur in the case of primary ventricular hemorrhage they have reported.

According to Gendrin (*loc. cit.* p. 444), the blood having taken its origin from the choroid plexus and filling the lateral ventricles may pass from within outwards by following the course taken by the plexus on its way to join the pia mater, and may thus give rise to a seeming meningeal hemorrhage. The truth of the third condition is borne out by the following cases: In a very complicated case reported by Dr. John Scott (*Edin. Med. and Surg. Jour.*, vol. xlii. 1834, p. 245), the blood had passed down the middle cornu on the right side and forced a way through the brain substance to the base. Dr. Todd (*loc. cit.* p. 641) maintains that blood escapes as often, if not more frequently, at the inferior cornua of the lateral ventricles as at the foramina of the fourth ventricle. This, however, is not borne out by facts. In Hutchinson's patient a clot, the size of a hazelnut, lay under the arachnoid close to the upper part of the restiform body, having escaped by lacerating the valve of Vieussens. In Forbes's case the blood had escaped below the cerebellum probably, also, by tearing away the valve, but this is not stated in the history of the case. According to Gouguenheim (*Des Tumeurs Anévrysmales des Artères du Cerveau*, Paris, 1866, p. 51), the blood being extravasated at the base of the brain sometimes by the force of the hemorrhage ruptures the floor of the third ventricle and thus enters this cavity. Such being the case we can easily understand how it might make its exit in an opposite direction, the hemorrhage having its seat in the ventricle itself. The fact that blood may escape from the ventricular space by lacerating the corpus callosum, and passing out at the great longitudinal fissure can, with justice,

be supposed, by remembering the oft-quoted case of chronic hydrocephalus, that of Cardinal, originally reported by Bright, where a similar accident occurred, the serum within the ventricles forcing its way externally by the route designated. Besides, Gintrac quotes a case in which blood secondarily extravasated into the lateral ventricles followed a like course.

It will be noticed that the blood chooses those points for forcing its way outwards where the ventricular cavity approaches the surface of the brain, the situations, therefore, which offer the least resistance. Such cases as come under the foregoing heads have been, and in the future probably will be, mistaken for cases of meningeal hemorrhage; in fact, so closely do they resemble the true that they might almost be said to be instances of apparent or pseudo-meningeal hemorrhage. Conversely, it is also true that the extravasation being primarily meningeal, following an inverse direction, may make its way into the ventricular cavities, as occurred in cases reported by Lidell, Abercrombie, Hare, Bristowe, and others, this taking place most frequently with rupture of aneurisms at the base, usually through the foramina of the fourth ventricle. Key and Retzius (*loc. cit.* p. 123) state "that a bloody admixture, even actual clots may be found in the ventricles without the slightest hemorrhage having occurred in them, the blood having reached them from a quite distant point." Nothnagel (*loc. cit.* p. 174) writes: "It is not uncommon for the blood, if extravasated in large quantities, to make its way into the ventricles;" while Niemeyer (*A Text-Book of Prac. Med.*, trans. by Humphreys and Hackley, N. Y. 1874, vol. ii. p. 203) says that "usually part of the extravasation (arachnoid) reaches the ventricles, and there also we find more or less blood."

In some cases blood may be simultaneously poured out both upon the internal and external surfaces of the brain. In a case recorded by Wepfer (Historia Apoplecticorum, Obs. I.) quoted in full by Rochoux (*loc. cit.* p. 43) and referred to by Gendrin (*loc. cit.* p. 444) this condition existed to a marked degree. The same was present in a case reported by Dr. John Scott, and seems to have occurred in several of my collected cases. We can easily understand the difficulty, even the almost impossibility of determining under these circumstances the part of the encephalon from which the hemorrhage primarily arose, whether at one or several points, the difficulty usually met with in finding the vessel from which the blood in cerebral hemorrhage came being remembered.

After carefully searching the various works at my command, I have been able to collect a series of ninety-four cases of the disease under discussion, some having been reported as such, but many as ordinary cases of cerebral hemorrhage. I have excluded from the list all about which there was a decided doubt, even though reported as cases of primary ventricular extravasation.

The only figures bearing upon the absolute frequency of this condition

as compared with cerebral hemorrhage, are those of Rochoux already quoted, *i. e.*, two cases in forty-one of hemorrhage into the brain, one of which has justly been considered very doubtful. It must be confessed that such figures are of but little practical value, as the number is far too small for the determination of such a question.

The relative frequency of the disease is shown by the following table:—

Left lateral ventricle	22
Right lateral ventricle	18
Both lateral ventricles	1
Lateral ventricles (which, undetermined)	28
Third ventricle	6
Fourth ventricle	4
Third or fourth ventricle (which, undetermined)	1
Not determinable	14
Total	94

In only 59 of these cases was the ventricle into which the hemorrhage occurred indicated by the reporter, but in the others I have from various modifying circumstances been able to determine with a certain degree of accuracy that it primarily took place into one or the other ventricle in all but 14 cases. Of course it must be admitted that such a table is justly open to doubt and can only be considered as problematic, and is therefore far from decisive. The 59 cases mentioned were arranged as follows:—

Left lateral ventricle	20
Right lateral ventricle	14
Both lateral ventricles	1
Lateral ventricles (which, not noted)	21
Third ventricle	3
Total	59

Thus in 94 cases of primary intra-ventricular hemorrhage, we find 69 occurring into one or the other of the lateral ventricles, and in 40 of these in which this point was determinable, it took place 22 times into the left and 18 into the right ventricle, thus differing from the secondary form where the contrary was presumed to hold true. Eleven cases involved either the third or fourth ventricle, showing that this variety is not as infrequent as one would suppose. Of these six primarily affected the third, four the fourth, while one was doubtful. Among the 59 cases above mentioned about the same relations existed.

There is no case of primary hemorrhagic effusion into the fifth ventricle on record, the absence of extravasation here being explained by the absence of a vascular lining membrane, while its small size and the tenuity of its walls render the determination of such a hemorrhage, if it exist, extremely difficult. Gintrac relates a case in which this ventricle was found full of blood following laceration of the septum. This case, however, was a secondary one.

Simultaneous hemorrhage into both lateral ventricles may occur according to Gendrin (*loc. cit.*), but he was unable at the time he wrote to find any

such case recorded. Nor am I able to establish positively such an instance. Of my collected cases blood is only noted in 14 instances as being found in both lateral ventricles. However, it is but fair to state that in only one of these is the condition of the other ventricles accurately given.

Whether or no hemorrhage can occur at the same time into any other two or more ventricles, for instance, one lateral and the third, or one lateral and the fourth, or the third and fourth, cannot be determined, but I am inclined to think not, at least none of the cases collected are available in the determination of this question.

Etiology.—The causes of primary intra-ventricular hemorrhage, both immediate and remote, excepting a few variations, differ in no essential respect from those of ordinary encephalic extravasation, and like them may more conveniently be considered and best understood under the two general heads of those which are predisposing and those which are exciting. Among the former may be classed age, sex, habits of life, seasons, etc.; among the latter sudden or prolonged exertion, emotional disturbances and injuries.

Age.—It is here that the greatest difference prevails between the variety of hemorrhage under discussion and the ordinary form, as the following table will show:—

Ventricular Hemorrhage.	Cases.	Per cent.	Cerebral Hemorrhage.	Cases.	Per cent.
Under 1 year of age	7	10.00			
1–10 years	3	4.29			
11–20 "	4	5.72	Under 20 years of age	1	0.26
21–30 "	6	8.56	20–30 years	10	2.61
31–40 "	7	10.00	30–40 "	20	5.22
41–50 "	12	17.14			
51–60 "	13	18.57	40–60 "	311	81.20
61–70 "	13	18.57	60–70 "	33	8.62
71–80 "	5	7.15	70–80 "	5	1.31
			Over 80 "	3	0.78
Total	70		Total	383[1]	

Of course our own cases are far too few in number for any positive statements, but few as they are this remarkable fact must be noticed; the comparatively frequent occurrence of intra-ventricular hemorrhage at the two extremes of life, in the very young and the very old, 14 cases, or 20 per cent., at or under the age of 20 years, and 5 cases, or 7.15 per cent., after 70 years; as compared with .26 per cent. and 2 per cent. relatively of the common form.

Gerhardt (Kinderkrankheiten) affirms that proportionately hemorrhage in children occurs very frequently into the ventricles of the brain; while Alois Bednar (Die Krank. der Neugebornen und Saüglinge, Wien, 1850,

[1] Hammond, loc. cit., p. 78.

p. 36), on the contrary, remarks that a hemorrhage into the ventricles is less frequently observed than the other forms of cerebral extravasation. According to Meigs and Pepper, ventricular hemorrhage is more common after three years of age than before. Cruveilhier (*Bul. de la Soc. Anat. de Paris*, tome vii., 2me ed., 1846) distinguishes three varieties of apoplexy in the new-born: the meningeal, the ventricular, and that into the brain substance; the first and second according to him being frequent, the third rare. In all, 14 cases were in patients under the age of 20 years. Three were aborted fœtuses, two of 5½ months, and one of 6½ months; a fourth a new-born child; another a baby 2 days old; a sixth a child of 6 months; another a child of 20 months; an eighth a patient 3 years of age; a ninth a purpuric boy of 3½ years; a tenth a boy of 4 years; an eleventh a boy of 11 years; a twelfth a lad of 13 years; a thirteenth a youth of 14 years; and a fourteenth an adult of about 20 years. Thus we have 8 of these 14 cases at or before the third year of life. The youngest case of cerebral hemorrhage coming under the notice of Hammond, was in a lad of 17 years of age. Five of my cases occurred in patients who had passed the 70th year of life, the oldest being a woman of 80. Maclachlan (Dis. and Infirm. of Advanced Life, Lond. 1863, p. 164) writes that "there are two forms of hemorrhage within the skull almost peculiar to the aged. In the first the blood is poured into the ventricles of the brain; in the second, into the great cavity of the arachnoid (intra-arachnoid apoplexy), or beneath this membrane in the space between it and the pia mater (subarachnoid apoplexy)." In this matter of age, as might be expected from the anatomical resemblances of the two parts, we find an exact correspondence between primary ventricular and meningeal hemorrhage. "True meningeal hemorrhage," says Ramskill (System of Med., Reynolds, vol. ii., 1872, p. 418), "is an affection which is found generally at the two extremes of life, in infancy and old age."

Over one-third of my cases, where the period of life was recorded, was in patients below the age of 40 years, 35.57 per cent.; whereas but 8 per cent. of the ordinary form occurred during a like period of life. The age of maximum frequency corresponds pretty closely to that of the interstitial variety of encephalic hemorrhage, *i. e.*, between 40 and 70 years.

Arranging the cases into classes of twenty years each, in order to show the relative frequency during the four quarters of life, we get the following:—

Ventricular Hemorrhage.	No. of cases.	Per cent.	Cerebral Hemorrhage.	No. of cases.	Per cent.
1st quarter	14	20.00	1st quarter	1	0.26
2d "	13	18.57	2d "	30	7.90
3d "	25	35.71	3d "	311	81.84
4th "	18	25.71	4th "	38	10.00

The cases of ventricular hemorrhage seem more uniformly spread over the various periods of life than in cerebral hemorrhage proper. Other points of resemblance and difference may be noted by glancing at the tables, but they are hardly of sufficient importance to deserve separate mention.

We must add that in eighteen cases in which the age, though indicated, was not distinctly stated, one occurred in a congenitally hydrocephalic infant, two in "old men," and fifteen in adults. The age was not indicated in six cases only.

Sex.—Here we find an almost exact correspondence between the two forms of encephalic hemorrhage we are now comparing. Thus in Hammond's 383 cases there were 259 or 67.62 per cent. males, and 124 or 32.38 per cent. females. Of my own 94 cases the sex is noted in 83; of these 59 or 71.08 per cent. were males, and 24 or 28.92 per cent. females. These cases were distributed over the various ages as follows:—

Age.	Male.	Female.
Less than 1 year	2	1
1 to 10 years	3	–
11 to 20 "	3	1
21 to 30 "	4	2
31 to 40 "	2	5
41 to 50 "	8	4
51 to 60 "	9	4
61 to 70 "	10	3
71 to 80 "	3	2

It will be noticed that in the decade 31 to 40 years only the females predominated.

Seasons.—Judging from the few facts bearing on this subject, winter would seem to be the season, and December the month of greatest prevalence of this disease; but as the number of cases in which this point can be determined is far too small for anything like positive deductions, the following are advanced with reserve:—

March, 2 cases, April, 4 " May, 4 "	Spring 1 total 11 cases.	June, 1 case, July, 3 " Aug., 4 "	Summer total 8 cases.
Sept., 2 cases, Oct., 3 " Nov., 5 "	Autumn total 10 cases.	Dec., 7 cases, Jan., 4 " Feb., 4 "	Winter 1 total 16 cases.

In three cases pregnancy existed, and in all delivery or an attempt at delivery occurred; one patient having passed the middle period of gestation, and two being in the ninth month; but in none did post-partum accidents occur. In two patients the attack came on just following delivery, both probably being cases of puerperal eclampsia.

The heart is mentioned as enlarged in thirteen cases, in only five of which did left hypertrophy exist to any considerable degree. In ten cases a previous attack of hemorrhage or hemiplegia is mentioned, a rather

large proportion. Of these, in one case the fatal seizure was the third, in another it is noted that the patient had already had several, and in one instance the previous attack had been into the left lateral ventricle, as shown by the post-mortem examination. In six cases convulsions preceded the attack for a greater or less period of time; in one, a woman, it is stated that she had suffered from "fits," not strongly marked by convulsion, since early childhood; in another, a male, epileptiform convulsions had occurred at long intervals for a number of years; in a third, the convulsions immediately preceded the attack; in a fourth, the patient had, it is stated, "two or three attacks of epilepsy," and in two females the convulsions were eclamptic, following labour, the urine being albuminous in one of these.

One case was a patient suffering from leucocythemia.

CASE 2. L. F., aged 13. In addition to the ordinary appearances of the blood, and symptoms of leukæmia, he presented considerable enlargement of the liver and spleen. At the same time there existed several large ecchymoses over the malleoli, and numerous purpuric spots over the upper portions of the chest. On several occasions he suffered from epistaxis and subconjunctival ecchymoses, and for some time his urine was albuminous. On 23d Nov. the little patient complained of giddiness and pain in his head; sight unimpaired; there was frequent cough, with abundant râles; fever. On 4th Dec. having kept his bed for several days, left it; his pulse was small, and there was slight deafness. On 5th, at 3 o'clock, abundant bilious vomiting and profound coma; at 7 o'clock more vomiting; at 8 o'clock coma persistent, insensibility, and resolution of the extremities, tracheal râles, pulse strong and better than at any previous time, 96; respiration 36 per minute. Death at 10 A. M.

Autopsy.—Cranial and spinal cavities; no extravasation of blood in the cerebral arachnoid; the subarachnoid spaces filled by a cloudy, reddish serum, resembling the serum of the blood obtained before death by venesection; the pia mater infiltrated with serum of the same appearance; nothing observable on the inferior surface of the brain; the cerebral lobes present a slight opaline tinge.

Ventricles.—The two lateral ventricles each contain an elongated clot, which curls around without penetrating into the choroid plexuses, which are pale but intact. The clots are soft and diffluent, like those obtained after venesection, wine-coloured, soon becoming of a bright red tint on exposure to the air. The cavity of the ventricles filled with serum. The clots are prolonged forwards into the middle ventricle through the very much dilated foramen of Munro. Behind they descend into and fill the posterior cornua to the hippocampus minor. In the middle cornua, along the cornu Ammonis, there was found a turbid serum, but no clots. The left lateral ventricle presents in addition a small capillary apoplexy of the white substance outside the corpus striatum. In the middle ventricle the clot was situated beneath the tela choroidea, and was continued into the aqueduct of Sylvius. In its left lateral wall a small superficial apoplexy, of the size of a lentil, was found. The right lateral wall was much more disorganized, the extravasation having destroyed its inferior part, without, however, penetrating more than three or four mm. into the thalamus.

The aqueduct of Sylvius was occupied by an elongated, cylindrical clot, which was continuous with a clot in the fourth ventricle, completely filling it. The latter occupied the posterior median fissure.

The walls of the fourth ventricle, the cerebellum, and the cord were healthy; the same being true of the pons and remaining parts of the encephalon. The spinal canal and cord presented no alteration from the occipital foramen down to the third dorsal vertebra, but from this point to the sacrum there was meningeal hemorrhage, clots being found between the dura mater and the bone. No extravasation in the subarachnoid space, no appreciable lesion of the cord. (M. Blache, *Bul. de l'Acad. de Méd.*, tome xxi. 1856.)

Another occurred in a case of scurvy.

CASE 3. An in-pensioner of Chelsea Hospital, aged 70, in whom a dry coagulum, fawn-coloured externally and black internally, somewhat larger than a garden pea, was found attached to the plexus choroideus, death in ten or twelve hours after the accession of stupor. The man had previously been much reduced by scurvy, in which, no doubt, the limited effusion had originated, otherwise, from the appearance of the coagulum, he would very probably have recovered. (D. Machlachlan, *loc. cit.* p 166.)

A third patient was the victim of purpura.

CASE 4. A boy, aged 3¼, was noticed to be languid for one day. On the second day bruises were observed on different parts of the body; on the third day, at 8 A. M., convulsions came on. The patient was in a torpid state, pupils equally contracted, tonic spasms over the whole body. Death occurred three hours after the convulsive seizure, and was followed by great rigidity.

On the *post-mortem* examination twenty-five hours after death, purpuric spots and bruises were well marked. The dura mater was adherent, and there was extensive hemorrhage into both ventricles, with laceration of the brain substance. There was no fracture of the skull. The child was well fed, and lived in good air. The case appeared one of idiopathic purpura. The blood probably exuded in this case from the choroid plexus, as no ruptured vessel could be found. None of the family was known to be bleeders. (Hallowes, *Brit. Med. Jour.*, vol. ii. 1878, p. 733.)

One case was affected with aggravated malarial cachexia, and a fifth was in a patient whose system was greatly reduced, having a few days before the fatal attack suffered from rather profuse hemorrhage from the gums.

Whether or no prolonged or sudden exertion is to be considered as a factor in the production of ventricular hemorrhage, cannot be positively determined, although it is mentioned as having preceded the seizure in Williams's, Bright's, and one of Mayo's cases. One patient was found insensible in a water-closet; here the possibility of straining at stool presents itself; and in one instance the attack occurred during coitus at the moment of ejaculation. In several cases the attack followed some slight exertion, but hardly such as might reasonably be considered capable of causing it.

A direct connection may, however, be traced between emotional disturbance and the disease in question, as in the following cases:—

CASE 5. A man, aged 67, porter, while occupied in sweeping the stairs of his house, became involved in a quarrel with a servant, and in the midst of violent anger, fell motionless on the stairs, without, however, losing consciousness. He was carried to the Hôtel Dieu. His entire left side was completely paralyzed; intelligence still unaffected, but for a time very obtuse; speech altered; there was slight acceleration of the pulse, and a little febrile movement. The next day he presented in the sound extremities slight contracture, and some convulsive movements. There was neither paralysis of the rectum nor of the bladder. The patient died on the third day, having presented alternating convulsions and resolution of the extremities.

On *autopsy*, extravasation of a rather large quantity of blood was found in the ventricles, with slight laceration of the posterior parietes of the left ventricle. (Chomel, *Journ. des Connais. Méd. Chirg.*, 1847, p. 135; and *Gaz. Méd. de Paris*, 3me série, tome i., 1846, p. 992)

CASE 6. Male, aged 46, violent quarrel; cephalalgia, state of excitation; stertor, loss of consciousness; nevertheless when irritated withdrew the extremity; teeth clenched; inability to swallow. Death at the end of 24 hours.

Rupture of the vein of the right choroid plexus. (E. Gintrac, Cours Théorique et Clinique de Path. Interne et de Thérapie Méd., tome vi., 1868; from Serres, *Annuaire Méd. Chirurg. des Hôpit.*, Paris, 1819, p. 320.)

CASE 7. Woman, eighty years of age, plethoric, in Dec., while at table, became angry and fell; deprived of sensation and motion; stertor; eyes fixed; hands cold; resolution. Death on the eighteenth day.

Cerebral arteries full of blood. Large blood clot in the ventricles. Vessels of the choroid plexus ruptured near their junction with the tela choroidea. (*Ibid.*, from Drelincourt, Bonet's Sepulchretum, tome i. p. 87.)

In one case the hemorrhage seems to have been secondary to ventricular inflammation.

CASE 8. A boy, four years old, healthy, fell, eighteen months back, three feet, striking his head on a hard board, wounding himself in the nape of the neck. He lost much blood. He soon recovered, but his good temper and docility changed into stubbornness bordering on viciousness. His right eyelids were always swollen, and the eye itself appeared more sunken in the head and smaller than the left. His gait was unsteady and stumbling; appetite, digestion, and other functions undergoing no change. In the winter he was attacked with croup. In twelve hours the symptoms of croup suddenly disappeared; and soon after symptoms of inflammation of the brain declared themselves, and the patient died the next day, presenting the indications of water stroke (serous apoplexy).

Autopsy.—This reveals traces of violent turgescence and inflammation of the cranial contents. Lymph was found in considerable quantity at the base, but little over the corpus callosum, in the ventricles, and in other situations. No serum in the cavities of the brain, but in the right ventricle blood was found extravasated, and an unorganized, oviform mass of the size of a pigeon's egg, weighing two ounces, and appearing to consist of coagulated lymph covered over with blood. The latter had probably its origin in the fall, and was the cause of his change in character; and the former produced the symptoms of water-stroke. (Goelis, Hydrocephalus Acutus, trans. by Gooch, Lond. 1821, p. 249.)

Such a case is to be compared with the instances of hemorrhagic effusion sometimes occurring during acute pleurisy, pericarditis, peritonitis, etc., and perhaps also with the so-called cases of pachymeningitis hemorrhagica interna. Besides, we also find bloody admixtures of the effused fluid in cases of acute hydrocephalus, leptomeningitis infantum, etc. (Huguenin); while Rokitansky, Förster, and others refer to ventricular hemorrhages occurring during the course of a congenital hydrocephalus.

According to Hewett (Holmes's Syst. of Surgery, vol. iv., p. 156) the ventricles of the brain are occasionally found filled with blood after injuries of the head, and speaking of contusion of the brain, he remarks, "in connection with this subject it may be stated that a laceration of the floor of the lateral ventricle, even when very slight, may give rise to an extensive extravasation of blood into this cavity, should it so happen that the injury corresponds to the situation of one of the large veins in this region. In a preparation in the museum of St. George's Hospital there is a slight laceration of the septum lucidum, as well as of the floor of the left lateral ventricle, where a large vein was laid open, and the ventricle was full of blood." Duret in his experiments has several times seen clots of blood in the ventricles of dogs, following sharp powerful blows upon the head. Of course it might be justly urged against such cases that they do not rightfully come under the head of primary ventricular hemorrhage as defined,

but as in such cases the laceration will be so minute as to be passed by as a rule unnoticed, and as we can hardly imagine such a tear giving rise to symptoms of its own, it is deemed best to include and consider such cases as instances of immediate intra-ventricular extravasation, admitting that strictly speaking they are in reality not so. In Hutchinson's case reference is made to a supposed injury to the head, but as the history is indefinite on this point, nothing positive can be deduced therefrom. In a case reported by Wilks (Lects. on Dis. of the Nervous System, Lond. 1878, p. 85), traumatism undoubtedly was the cause of the ventricular hemorrhage. "In a man who had fallen and cut his head, the ventricles were found full of blood, but a most careful examination failed to discover the source of the hemorrhage."

Gout, abuse of alcohol, syphilis, etc., may be mentioned as predisposing causes, acting in the same manner as in ordinary cerebral hemorrhage, that is, by giving rise to changes in the arterial walls of the cerebral vessels.

Pathology.—Can hemorrhages into the ventricles occur without rupture of the bloodvessels? Can the extravasation of blood take place by the process formerly known as exhalation, but now known as diapedesis, hemorrhage by transudation through the vascular walls? I am willing to admit, though doubtingly, that such might be true of those cases where the hemorrhage remains minute; such, for instance, as are found in leptomeningitis infantum, or cases of serous ventricular effusion with bloody admixture; but I am hardly prepared to admit the truth of this proposition when dealing with large hemorrhages. Bricheteau (*loc. cit.*, p. 293) speaking of his cases says, "in two instances which we have met with not a trace of tear could be discovered in the walls of the ventricles, which proves that the hemorrhage took place by exhalation." Gintrac admits that blood may be extravasated into these cavities without palpable alteration of their parietes, and refers to it as by exhalation. Rochoux quotes two cases as instances of extravasation by exhalation, but makes no comment upon them. "In very rare cases," says Fox (*loc. cit.*, p. 44), "blood is found in the ventricles without any lesion that can readily account for it, with healthy plexus choroideus and venæ galeni, with floor, and walls, and roof of the ventricles perfectly healthy. In these cases the hemorrhage has been supposed to have been due to a kind of exhalation, but of this there is no sufficient proof." For a similar condition of hemorrhagic extravasation into the arachnoid cavity, Prus (Mémoire sur l'Apoplexie méningée; *Mém. de l'Acad. Roy. de Méd.*, Paris, 1845, tome xi. p. 18) has advanced the opinion that it always occurs by exhalation, but as Ramskill remarks (*loc. cit.*, p. 419) "hemorrhage by exhalation is, however, a pathological phenomenon not accepted nowadays, and for which cases of molecular rupture of bloodvessels used to be mistaken." Watson (Prac. of Physic., Phila., 1872, vol. i. p. 274) maintains that most cases of cere-

bral hemorrhage result from the rupture of a bloodvessel of appreciable size, and this opinion is endorsed by Jones and Sieveking (Path. Anat., Phila., 1854, p. 32). Further on he asserts that exhalation is a condition hardly recognized or admitted by pathologists of the present day, since in such cases, where lesion of an artery of appreciable size cannot be found, numerous ruptures of minute capillaries will easily account for the presence of the effused blood. Suffice it to say here, that it is in the highest degree probable that the existence of free blood extravasation in the ventricles, primary in its origin, depends upon previous laceration of a bloodvessel or vessels, which rupture may be so minute as to escape detection. The mere fact that a rupture is not found does not preclude its presence.

The most common direct cause of primary intra-ventricular hemorrhage is, of course, the rupture of some vessel ramifying on or near the ventricular walls. These, as an anatomical description might readily show, are very numerous. The sources from which the blood may come, are: 1st, the vessels of the choroid plexuses; 2d, the vessels of the tela choroidea; 3d, the arteries ramifying on the ventricular walls, viz., the choroids, branches of the arteries of the corpus callosum, etc.; 4th, the veins, *i. e.*, vena corpora striata, those of the thalamus, the venæ Galeni, etc.; 5th, large aneurisms encroaching upon or existing within the ventricles; 6th, tumours involving neighbouring parts, and passing into the ventricles, or those actually found within these cavities themselves, as medullary carcinomata, gliomata telangiectoides, and true vascular or angiomatous tumours; 7th, inflammatory conditions or ulcerations of the ventricular walls.

The choroid plexus, generally that of the lateral ventricles, is usually designated in the cases collected as the point from which the blood had taken its origin; in fact Morgagni, and with him many of the early writers, seems to have considered its rupture one of the most prominent causes of cerebral hemorrhage, for we find him frequently writing that the blood came from this plexus. Abercrombie states that the blood may come from the vessels of the choroid plexus, and mentions a case recorded by De Haen. Bright (*loc. cit.*, p. 334) makes the following remark upon this point: "It is not improbable that occasionally the choroid plexus is the source of the effusion of blood. Of this, however, I have no direct example to adduce, but I am inclined to believe that those rounded masses of a yellow colour, which are sometimes detected in the posterior portion of the choroid plexus, are the remains of sanguineous effusions which have fortunately proceeded to no great extent, and the blood has gradually undergone a change analogous to that of blood effused under the pia mater." Jones and Sieveking (*loc. cit.*, p. 245) believe that "the greater density of the coats of the vessels in the choroid than in other parts may account for the rarity of their being the sources of hemorrhage; indurated yellow bodies are, however, occasionally found in them which are referable to former effusion." Hufeland, Gintrac, Copland, and Duret may be mentioned as

adherents to this belief, while Gendrin claims that actual ruptures can sometimes be shown, an assertion proved by several of my cases.

CASE 9. Woman, aged 23, primapara, was seized with eclampsia three hours after delivery, and succumbed during the seventh or eighth seizure. There had been marked predominance of the convulsion on the left side. The urine contained albumen in large quantity.

The two lateral and the third ventricles were distended with blood. The walls of the ventricles had not suffered any laceration. On cleaning the specimen under a jet of water, it became easy to satisfy one's self that the hemorrhage had had its origin in the choroid plexus. The pia mater was not the seat of any extravasation, but there was some rachidian meningeal hemorrhage. (Charrier, *Bul. de la Soc. Anat. de Paris*, 2me ed. 1846.)

Morgagni mentions a case in which the hemorrhage was traced to the ruptured vessels of the choroid plexus, while Serres's and Drelincourt's cases, already mentioned, are instances of hemorrhage due to rupture of the vessels of this plexus. It is highly probable that many of the cases, where no cause was discovered for the extravasation, were instances of hemorrhage from the vessels of this part, those of the lateral ventricles being the most common seat.

Rupture of the vessels of the velum interpositum occurs much less frequently than of those of the choroid plexuses of the lateral ventricles. This may, I think, be explained by the fact that the latter have two quite large arterial twigs opening into them, and hence are more directly affected by the varying degree of tension, etc., to which the arterial system is subject. The case recorded by Bright may be quoted as a case of rupture of the velum :—

CASE 10. Mr. N., aged 57, of a spare habit, a temperate liver, of an anxious disposition, subject to be frequently disturbed from his rest by professional engagements, had enjoyed good health up to the 1st of July, 1830. Having been much fatigued during that day he retired to rest about half-past ten, after having made a moderate supper. About half-past one he awoke with feelings of nausea; this was succeeded by several attempts to eject the contents of his stomach, and after vomiting he seemed relieved. Mrs. N. became alarmed by some noise that proceeded from his throat, and summoned his son, who found him in an apoplectic fit, nearly insensible, and breathing with extreme difficulty. Before medical assistance could be obtained, his breathing had become stertorous, his pulse much depressed, and in twenty minutes from his seizure he died.

Autopsy took place in the evening of the day on which he died. The membranes were turgid with dark-coloured blood, and the dura mater adhered very firmly to the bone. The substance of the hemispheres generally appeared to be healthy. On opening the lateral ventricles a large quantity of semifluid blood was found, distending the ventricles exceedingly, and raising up the velum interpositum from the thalami. The corpora striata appeared to be torn on their surface, or rather broken down to the depth of about the fifth of an inch, and beyond this torn part, where the substance seemed to be entire, small dark spots of ecchymoses were discernible. The velum interpositum was also rent in one part; and from the bloodvessels of this membrane the hemorrhage might possibly have arisen. On separating the thalami, the commissura mollis was found torn through by the distending force of the blood, which had found its way into the third ventricle, and thence into the fourth ventricle. The entire quantity of effused blood might amount to more than three ounces. (Bright, *Reports of Medical Cases*, 1831, vol. ii. part I.)

I have met with no instance in which the hemorrhage could be directly traced to rupture of one of the arteries ramifying on the ventricular walls. Hutchinson states that the cause of the extravasation in his case was the giving way of some artery of considerable size, but says nothing of the situation of this vessel. Charcot, however, reports a case of old hemiplegia in a patient fifty years of age, in whom, on *post-mortem* examination, several ochrous foyers were observed at points of the arch of the corpus callosum. Here the blood must undoubtedly have been effused from the branch of the artery of the corpus callosum ramifying on this portion of the ventricular walls.

The blood may come from the veins, especially from those of the corpus striatum and the venæ Galeni, vessels which are of considerable size, and can thus furnish a large amount of blood. This origin is referred to by Gendrin, and Rokitansky states that the hemorrhage may arise from one of the dilated vessels, ramifying on the ventricular walls in cases of rapidly increasing congenital hydrocephalus. Jean Pierre Frank (*Traité de Méd. Prat.*, trad. du Latin par J. M. C. Gouderean, tome ii., 1842, Paris, p. 421), quoting from Walter, says, "when the veins of the brain for a long time distended, become ruptured, the rupture most frequently occurs in the choroid plexus, and the ventricles become filled with blood." Jones reports the following case: A patient died a few minutes after the appearance of tetanic spasms. The parts around the clots were healthy; it was a case of small amount of effusion into both lateral ventricles, issuing from a large dilated vessel in the tænia semicircularis. (L. Jones, *Brit. Med. Journ.*, vol. i., 1864.) The vessel here mentioned was undoubtedly the vena corporis striati, which runs beneath the tænia semicircularis. In Hewett's case a large vein, on the floor of the left lateral ventricle, was laid open, and from this source the hemorrhage arose.

CASE 11. A fœtus of six and a half months was born after a labour of six hours, and immediately expired. On opening the body, M. Cruveilhier found a double ventricular apoplexy; several ecchymoses being situated along the course of the veins which ramify on the surface of these cavities, thus proving, according to the reporter, that here, as in the very large majority of cases observed, the apoplexy of the new-born is venous. (Cruveilhier, *Bul. de la Soc. Anat. de Paris*, 2me ed. 1846.)

Barot reports a case in which the extravasation may fairly be inferred as being of venous origin.

CASE 12. A German, porter, aged 58, in poor health, suffering from bronchitis and venous congestion of the head. In December, after a storm during the night, he was found with eyes closed, in a comatose condition, and incompletely paralyzed on the left side. Incoherence; respiration puffing; pulse natural; face inclined to the right. On the third day he died. His cerebral venous system was found much engorged, and in the right ventricle a blackish clot of two ounces. (Barot, *Thèse de la Faculté de Méd de Paris*, 1818.)

Damming back of the venous blood from whatever cause, either by the pressure of tumours upon the veins, especially those of Galen, by thrombosis of the cerebral sinuses, or by constriction of the neck, etc., may and

have given rise to ventricular hemorrhage. However, it is certain that such conditions undoubtedly not unfrequently produce serous effusion into the ventricles. In the *Transactions of the College of Physicians of Philadelphia*, 3d series, vol. iii. 1877, we find the report of a case by Dr. Arthur V. Meigs, of thrombosis of the cerebral veins, with hemorrhage into the ventricles of the brain. The right choroid plexus was the seat of firm black clots; a firm black clot was found in the veins coming from the right corpus striatum, and the venæ Galeni were plugged. The clot continued on as far as the straight sinus. In the left choroid plexus one or two veins were filled with clot. The ventricles contained much blood, but as the surrounding parts were extensively destroyed, the question whether or no the extravasation primarily involved the ventricles cannot be determined. It is certain that thrombosis of the cerebral sinuses has been known to give rise to meningeal hemorrhage (Nothnagel), and why not an analogous condition in the ventricles? That venous engorgement was the prime cause in Richardson's case can hardly be doubted.

CASE 13. A man attempted to commit suicide by hanging, but was cut down before he was dead. As he was liberated, quite unconsciously he rushed madly forward and fell. He lived three days, and after death extensive effusion was found in the ventricles and the most intense congestion of the cerebrum, the cerebellum being scarcely affected. (B. W. Richardson, *Med. Times and Gazette*, vol. ii. 1867.)

In those cases in which the hemorrhage immediately followed convulsions interference with the return circulation must be blamed as the cause. One such case has already been given. A second is by Morgagni, who records the case in the following terms:—

CASE 14. In the dissection of Madame de Mauvoisin, who died in childbed, apoplectic and epileptic at the same time, I observed that the whole left ventricle of the brain was full of a watery blood, serous, putrid, and discoloured, and that the veins of the plexus restiformis together with the arteries were tumid, as if inflated, and of a black colour. (*Loc. cit.*, from Targioni: In fine della Deferiz. d'un Tumore Follic.)

Large intra-cranial aneurisms as contradistinguished from miliary aneurisms may be of three kinds as regards situation: 1, those involving the external vessels of the brain; 2, those seated on vessels in the brain substance; and 3, those affecting the vessels of the ventricles. The first form may by its gradual enlargement cause pressure upon and absorption of the nervous substance intervening between it and the ventricles, and may thus finally encroach upon those cavities into which it may ultimately rupture.

CASE 15. A man, aged 56, had suffered from symptoms of vague import, but of increasing ill omen, of which symptoms three convulsive attacks were part, death occurring in the last His cerebral ventricles were found full of blood, which had come from a rent in an aneurism, in the middle line of the hinder part of the circle of Willis, just at the divergence of the posterior cerebral arteries. (Hughlings Jackson, *loc. cit.*, p. 245.)

CASE 16. A stout, rather fat woman, æt. 52, mother of several children, was admitted into the Middlesex Hospital, much exhausted, with a very weak pulse, and complaining of violent headache, on April 14th. Towards night she complained of slight weakness and numbness of the right extremities, and at 3

A. M., symptoms of apoplexy supervened, of which she died in four hours. The only account that could be got of her previous symptoms was, that she had been attacked a week before with shivering.

The cranium was very thick, especially in the frontal region, the internal surface of which was lined by new bone, which had probably been deposited during pregnancy. The dura mater was healthy. The left hemisphere of the cerebrum was larger than the right. The convolutions of both hemispheres were compressed and flattened, as was particularly evident on the right side; for the convolutions on the left were separated by effused blood. A large quantity of recently extravasated coagulated blood was accumulated in the arachnoid cavity, and in the meshes of the pia mater all around the anterior two-thirds of the left hemisphere. Both lateral ventricles were filled with coagulum and bloody serum. The hemorrhage was found to have proceeded from an aneurism, which had originated from the extremity of the left internal carotid artery. It lay immediately above the left optic nerve and body of the sphenoid bone, the former of which curved downwards below it, and was elongated and flattened, while the latter was indented and partially absorbed, and it had extended upwards into the substance of the anterior lobe, forming for itself a deep fossa by removal of the perforated plate of gray matter situated at the inner extremity of the fissure of Sylvius, the adjoining roots of the olfactory tract, the anterior part of the corpus striatum, and a considerable quantity of the neighbouring white matter of the anterior lobe. The aneurismal sac was remarkably thin, and it had burst, the rupture taking place on the surface next the ventricle. The rupture of the aneurismal sac appeared to have led also to a slight rent of the lining membrane of the ventricle immediately adjoining, and thus hemorrhage occurred into its cavity, though the greater part of the blood had passed downwards again outside the sac to the base of the brain, and spread out in the meshes of the pia mater. The other arteries of the brain were remarkably healthy. (Moore, *Lond. Med. Gaz.*, vol. xli., 1848.)

A third case is by Hanot.

CASE 17. An insane female, aged fifty years. Death supervened two hours after the appearance of apoplectic symptoms.

Autopsy.—The bones of the vault of the cranium were thicker by a half than in the ordinary state. Nothing abnormal in the dura mater; pia mater and arachnoid healthy. Medium amount of serous subarachnoid effusion. On raising the calvarium, the hemispheres seemed to project from the cranial cavity, in fact bulging very much, especially laterally. A transverse incision at the level of the roof of the lateral ventricles, showed these cavities as well as the middle ventricle completely filled by blackish blood-clots. The fourth ventricle was also filled by a clot. The middle ventricle was destroyed laterally and posteriorly, neither septum lucidum, fornix, tubercula quadrigemina, nor pineal body being found, all these parts being replaced in addition to the blood-clots by a magma of pulpy tissue resembling the lees of wine or a red softening. With the microscope some normal nerve cells, some broken fibres intermixed with blood globules were seen. The inferior third of the floor of the left ventricle was formed by the same reddish pulp. The protuberance, and the entire medulla presented no other alteration to the naked eye. No portion of the tissue of the hemispheres showed foyers of softening or hemorrhage; no signs of encephalitis. At the base of the brain, on a level with the circle of Willis, existed an irregularly spherical tumour, of which the inferior surface was seen extending from the anterior border of the protuberance to in front of the chiasm of the optic nerves, and from the border of one sphenoidal lobe to the other, and measuring about five centimetres in length by three in width. It had pushed the anterior and inferior interhemispheric fissure to the right, and rested external to the right optic nerve, which had a grayish appearance and a sclerous consistence. The chiasm and the left optic nerve were compressed by the tumour, which adhered to the base of the brain over a very limited space only.

On section, this tumour was recognized to be an aneurism, there was a distinct wall, a cavity almost entirely filled by a stratified whitish clot, an open space of about one centimetre in diameter, filled by a soft, blackish clot. By its superior

surface, the tumour had penetrated into the middle ventricle. It was by this wall that the aneurism had ruptured, an irregular perforation of one centimetre in length being found there. It was through this that the blood had been poured out into the middle ventricle, thence passing into the lateral and fourth ventricles, without, however, escaping from the ventricular cavity.

Dissection showed that this aneurism was at first formed at the expense of the left posterior cerebral artery, but in developing had ended by involving the branches given off from the left side of the circle of Willis, and it was noticed that the vessels passing off from this side to enter the brain communicated more or less directly with the cavity of the aneurism. The basilar and other branches presented hardly any signs of atheroma. (Victor Hanot, *Bul. de la Soc. Anat. de Paris*, vol. xlvii., 1874.)

Of the second variety of cranial aneurism the same remarks hold true as of the first, as shown by a case where an aneurism of a small artery of the posterior lobe had burst into the posterior cornu, the blood also escaping on the surface of the brain. The ganglia on the floor of the ventricles remained uninjured. (Hughlings Jackson, *loc. cit.*, p. 522.) Morgagni (*loc. cit.*, p. 42), commenting on a supposed case of intra-cranial aneurism, refers to the possibility of one of the arteries in the choroid plexus being so affected, the rupture of such an aneurism and the effusion of blood into the ventricles, a fatal apoplexy being the consequence. Nor is such a presumption idle, as facts will prove. In the *Edin. Med. Journ.*, vol. xxii. Part II. 1874, p. 894, we find the history of the following case:—

CASE 18. Female, age 27, symptoms present at 18. Atrophy of the right crus cerebri, and less of the right half of the pons. Lateral ventricles enlarged, especially the right. In the substance of the right anterior lobe, just outside the cornu, lay a red, stringy mass, being a network of vessels seemingly, and in places cavernous tissue. It resembled a tassel, and was of the size of an almond, and communicated at both ends with vessels, at the outer end with a branch of the middle cerebral, which dipped in just above and in front of the island of Reil; at the other with a vessel of the size of a crow-quill, which ran backwards to the line between the corpus striatum and the optic thalamus. Here the artery was dilated at one side into a small aneurism of the size of a green pea; and from the side of the small aneurism sprang a second pouch as large as a walnut, round, smooth, firm, and filled with laminated clot. A fibrous capsule inclosed the larger pouch, continuous with the wall of the smaller one. In the smaller aneurism, and at a spot near the upper part of the large one, was fluid blood. The optic thalamus and corpus striatum were pressed upon and hollowed out by the larger aneurism, which made for itself a bed in these centres. The vessel then passed round the foramen of Munro, which it entered side by side with the anterior end of the choroid plexus, with which, however, it did not seem to communicate. It then turned backwards, and ended in the enlarged veins of Galen, inclosed in the velum interpositum. (Alex. Robertson and D. Foulis, *Edin. Med. Journ.*, vol. xxii. 1877, p. 894.)

This was in all probability a case of aneurism of the anterior choroid artery, which sometimes arises from the middle cerebral artery. Dr. Robertson states that he had met with a similar case a number of years before. In a case reported by Van Der Byl, rupture of such an aneurism actually occurred.

CASE 19. J. E., æt. 56, had fallen down in a fit, and was brought to the Middlesex Hospital, where he died while in the waiting-room. External surface

of the dura mater much congested, the meningeal arteries distended; pia mater much congested; convolutions of the brain flattened; substance pale. On opening the lateral ventricles about one ounce of bloody serum escaped, and black clots were found occupying both cavities, the right ventricle being entirely filled with coagula. The septum lucidum was softened and broken through. On carefully removing the coagula from the right lateral ventricle, an elastic tumour, about the size of a hen's egg, was discovered in the middle or descending cornu of the lateral ventricle; it seemed attached to the hippocampus major, and growing into the ventricle; the surrounding brain substance was softened and broken up, and presented a yellowish gelatinous appearance, mottled with pink spots. A slight stream of water washed away all the softened brain substance, and left an irregular, rough, villous cavity, in which the tumour remained suspended. On section, this tumour exhibited a laminated aspect, as if composed of concentric fibrinous layers, which differed somewhat in colour, some being dark, others light. On minute examination the tumour was found attached to an artery entering the middle cornu of the ventricle, along with the velum interpositum, and on tracing the vessel to the base of the brain, it was found to be the posterior cerebral artery—one of the branches of the basilar which, after winding round the root of the cerebrum, entered the brain in the manner just described. (Van Der Byl, *Trans. of the Path. Soc. of Lond.*, vol. viii. 1856.)

The origin of this tumour is rather doubtful, but it seems to have been given off from one of the posterior choroids, though it must be admitted that the course described as taken by the artery from which it arose is not exactly that of either of these vessels.

Tumours when involving or extending into the ventricular space may give rise to hemorrhage in the same manner that they do when developed in the brain substance. Of course this is most apt to occur in cases of highly vascular enlargements, such as true vascular tumours, angiomata, medullary carcinomata, tumours of the pineal body, or gliomata telangiectoides. Vascular erectile tumours have been observed in this neighbourhood, and the possibility of their rupture must be borne in mind. In one instance, described by Lebert, the growth was lodged in the right lateral ventricle, and was developed from the choroid plexus. Guerard reports the case of a child, three years of age, in whom he found a bluish-red tumour of the volume of a hen's egg, seated at the posterior extremity of the right lateral ventricle, dependent from its choroid plexus, and consisting of dilated and very sinuous vessels. In another case reported by Förster, a telangiectatic tumour of about the size of a pigeon's egg was found in the third ventricle, involving its choroid plexus, consisting of spindle-shaped and sacciform dilated capillaries, and actually the seat of numerous extravasations. Virchow (Path. des Tumeurs, trad. par Paul Aronssohn, Paris, 1876, p. 153) affirms that the most frequent seat of angiomata is the floor of the fourth (?) ventricle, the red points found in their neighbourhood being the effect of small blood extravasations.

Dr. James Robertson reports in the *Dublin Medical Press*, March 28, 1860, p. 257, an interesting case of a large tumour in the right lateral ventricle, presenting the appearance and consistency of medullary matter, except at several points, where it was of a red colour and highly vascular. Rokitansky has seen two cases of cancer of the ventricles, one a medullary

carcinoma seated in the fourth, the other an alveolar carcinoma involving one of the lateral ventricles. Hooper (The Morbid Anat. of the Human Brain, London, 1828, p. 62, Plate XII.) gives the representation of a large cephalomatous tumour projecting into the fourth ventricle. Wallmann has found in one and the same subject a colloid cyst of the third ventricle and a lipoma in the choroid plexus of the right lateral ventricle. In an earlier portion of this article we have mentioned several instances of dermoid cyst of the ventricles. These cases merely establish the possibility of intra-ventricular hemorrhage from such a source, viz., ventricular tumours, but such a possibility is made a certainty by the following case:—

CASE 20. M. B., aged 35, admitted to an asylum as insane, where he remained but a short time, death occurring suddenly with symptoms of apoplexy.

Dissection.—Dura mater tolerably firmly adherent. Convolutions much flattened and extremely dry; pia mater difficult of separation, particularly in the middle and superior part, but did not remove any laminæ of brain with it. Cortical substance everywhere of a high colour, particularly on anterior lobe, white substance exhibited none of the well-known dots of blood. Cerebral vessels on the surface contained but little blood. On cutting into the ventricles it appeared that the pia mater investing them was very much thickened, so that the white cerebral substance could easily be separated from it On opening the right rather dilated ventricle, whence a considerable quantity of clear serum flowed, we came on a rather long vesicle studded with some dark brown vesicles, immediately under the fornix and great commissure, in the situation of the foramen of Munro, which here appeared largely dilated; the length of the vesicle, from before backwards, was five and a half centimetres; on the right side the corpus striatum and thalamus were apparently healthy, somewhat pushed to the side, the walls of the vesicle passed uninterruptedly into the walls of the ventricles so that it appeared that the pia mater which lines these cavities internally also invested the vesicle.

At the level of the great commissure the cerebral mass expanding over the left ventricle appeared to be much more swollen; the investing membrane was here much denser and thicker, and could not be torn without difficulty. On opening the ventricle much bloody serum escaped, contrasting with the right cavity, where the serum was clear. The cavity of the anterior left cornu was about as large as a duck egg, and was filled with recent coagulated blood. It now appeared that the vesicles in the right cavity were connected with those in the left, as they were full before the opening of the left ventricle, but collapsed after it. About in the situation of the thalamus under the fornix was a bloody yellow, soft substance, presenting the appearance of medullary fungus coloured with blood. The vesicle in the right cavity was covered with a membrane composing the lateral wall of the septum lucidum and passing into the investing membrane of the ventricle, so that also anteriorly the wall of the vesicle passed into the investing membrane of the cornu anticum. The left ventricle was much more distended owing to the presence of an abnormal medullary body; it was partly filled with coagulated blood, which was also separately effused in several parts of the tissue; on the left side, the sac extended into the cornu posticum, to the commencement of the calcar avis, covered by an organized membrane; which again was connected with the walls of the ventricles, and was uninterruptedly continued into them. On accurate examination, after the brain had been for a couple of days left to harden in spirit, it was seen, by lifting up the posterior portion of the corpus callosum, that the abnormal body was continued backwards through the very dilated third ventricle, and here terminated, just in front of the corpora quadrigemina, which were more or less flattened, and that the tumour consisted of a degeneration of the pineal gland. This was reduced to a matter of certainty by the microscopic examination made by Profs. Schroeder van der Kölk and Harting; thus in the tumour, even on a level with the corpus striatum, the peculiar conglomerations were found constituting the so-called cerebral sand, which was here present in great quantity as mulberry-like granules, and is distinguished from the sand in

the choroid plexuses, which latter always exhibit spherical globules. The choroid plexus in each ventricle was normal and was not connected with the tumour; the tumour itself appeared under the microscope to consist chiefly of granular cells of the size of blood-corpuscles, from which, however, they were plainly distinguished by their granular contents, their unequal and mostly oblong form, without any defined nucleus; these cells were everywhere, both on the surface and the investing membrane and within the tumour, exactly similar, and between them were capillary vessels arranged in a reticulated form, and connective tissue. Nerve fibres were not to be distinguished with certainty. . . . . Death was the result of an effusion of blood from the tumour into the left ventricle producing rapid and excessive pressure and distension, attended with sudden arrest of all the phenomena of life, without the manifestation of any convulsive movements. (Wm. D. Moore, *Dublin Med. Press*, March 28, 1860, p. 255; from *Geneeskundige Courant*, 25th Dec. 1859.)

The fact that hemorrhages may be dependent upon inflammation of the walls of the ventricles has already been referred to. Hooper (*loc. cit.* p. 34) states that "ulceration, the consequence of inflammation, is occasionally seen on the surface of the ventricles. I have found an ulcer on the corpus striatum, and in another subject one on the outer wall of the right lateral ventricle; and, in both instances, it seemed as if a small abscess, the size of a split pea, had ruptured into the ventricles." Copland places the most frequent seat of this ulceration over the corpora striata. If such an ulcerative process involves one of the vessels, the result would, of course, be an intra-ventricular hemorrhage.

Does atrophy of the brain ever enter as a factor in the production of primary ventricular hemorrhage? To this I answer, decidedly yes! However, Nothnagel (*loc. cit.*, p. 74) believes that "still less foundation is there for the view that a primary atrophy of the cerebral substance is to be reckoned among the causes of hemorrhage." According to Leubuscher and Niemeyer gradual atrophy of the brain induces dilatation, and finally may produce rupture of the bloodvessels. The latter also further adds that a second attack of cerebral hemorrhage is, in many cases, brought about by the atrophy of the brain, which, he thinks, the first seizure induces. In dementia paralytica, in which there is atrophy of the brain, we find the ventricles more or less dilated, especially the cornua, and here we frequently find hemorrhages beneath the dura mater, and in many cases the *état criblé* on section of the medullary substance indicating "abnormally dilated red vascular cavities" (Hitzig). Dr. Edward Long Fox, among 700 post mortems of insane cases, found effusion of blood in various situations 131 times, and of these 20 times was blood found in the ventricles, but as I am unable to obtain the details of these cases, the variety of insanity, the form of the ventricular extravasation, whether primary or secondary, cannot be determined.

The vessels of the membrane lining the ventricles are, following Hooper (*loc. cit.*, p. 33), sometimes found much enlarged and distended with blood when a fluid is collected in these cavities so as to increase the size of the ventricles. According to Rokitansky in cases of congenital hydrocephalus, where dilatation of the ventricles is going on, and hence where we find a

somewhat analogous atrophic condition of the brain as in general paralysis of the insane, hemorrhage is very apt to occur from the enlarged vessels ramifying on their walls. Wilks (*Lects. on Path. Anat.*, London, 1859, p. 145) has noticed that "in cases of chronic atrophy of the brain, and in old people, it is not uncommon to find a cystic formation in these bodies (choroid plexuses), thus showing an interdependence between these plexuses and the condition of the brain." The fact that ten of my cases had previously suffered from more or less well-marked attacks of cerebral hemorrhage, seems to lend strength to the theory that atrophy of the brain can bring about a ventricular extravasation of blood, and such a belief is strengthened by several cases recorded.

CASE 21. A male, aged 52. Sudden death. *Head.*—Opacity of the arachnoid. There was flattening of the convolutions. The lateral ventricles contained between five and six ounces of fluid. A clot of blood, one drachm in weight, presented itself at the foramen of Munro, and filled the third and fourth ventricles. The corpora striata appeared wasted; not so full or so firm as natural. The medulla was slightly permeated by blood at the origin of the pneumogastric nerves. Weight of brain 48¾ ounces. Heart enlarged, 17 ounces. (R. Boyd, *Edin. Med. and Surg. Journ.*, vol. lviii. 1847.)

CASE 22. B., aged 20, insane for many years. One day, after a large meal, he suddenly sank to the earth. Complete abolition of sensation and motion; respiration difficult and noisy; pulsations of heart very violent; face pale; a little froth issued from his mouth; no convulsion. The patient died twenty minutes later, without having regained consciousness.

Autopsy.—Convolutions flattened; the anterior lobes had suffered a notable arrest of development. The encephalon, on removing it from the cranial cavity, had the appearance of a single hemisphere; the meninges were normal. In the left lateral ventricle a hemorrhagic mass of the size of a large hen's egg was found. Another one of the size of a bean was also discovered in the fourth ventricle. This second clot had been probably detached from the collection in the other ventricle, and had traversed the aqueduct of Sylvius. The other parts of the brain did not appear involved. The principal arteries, however, were markedly atheromatous. Heart very large.

M. Bouchard examined a portion of the brain bordering upon the clot, and had no doubt that the hypertrophy of the heart was to be considered a predisposing cause in the production of the hemorrhage; but he thought it depended especially upon the alteration of the vessels of the brain. In fact, all the arterioles of the brain were diseased, there being a notable multiplication of the nuclei in their lymphatic sheaths, in the adventitia and intima; and less muscular fibres were met with than in the normal state. But most important of all small aneurisms were discovered. (M. E. Brémond, *Bul. de la Soc. Anat. de Paris*, tome xlii. 1867.)

In a few cases primary softening seems to have favoured the occurrence of the effusion into the ventricles, perhaps as pointed out by Jackson, by diminishing the support of the bloodvessels; and, what might be added, by the probable coincident degeneration and weakness of the vascular walls.

CASE 23. A female, about 60, subject to fits, not strongly marked by convulsion, from a very early period of life. At 8 o'clock she was found on the floor, where she had fallen while washing herself, unable to rise, but perfectly sensible. Her speech was altered. She continued sensible until about 11 o'clock A. M., when she gradually became unconscious; and at 4 P. M. was in a state of profound coma. The measures resorted to for her relief were of no avail, and she

died at 3 o'clock the following morning, nineteen hours from the commencement of the attack.

The head was examined thirty-six hours after death. The substance of the brain was wounded in removing the calvarium, and a considerable quantity of blood flowed out. On the surface of the left hemisphere two thin plates of bone were found, of small size, and in the superior longitudinal sinus were two others, about an inch in length and one-sixteenth in thickness at the thickest part. The substance of the brain was generally soft. The floors of the lateral ventricles were stained with blood, which had filled them, but which had mostly escaped on opening the cranium. The softening was most marked in the posterior corner of the right ventricle, and in parts presented almost the appearance of pus. (Woodfall, *Lancet*, vol. i. 1850.)

CASE 24. A female, aged 72, died in La Salpétrière. Usually felt well, save a slight feebleness in one of her legs. This difficulty had increased during the last few days, and of late she had complained of some dizziness, pain in the head, and constipation, and also of cramps in the legs. One day, after a large meal, while near her bed, she suddenly fell, and had some convulsive movements. Being conveyed to the infirmary, she was in a state of complete prostration, skin cold, pulse small and frequent, respiration stertorous, insensible, no answers to questions, eyelids closed, pupils immobile and slightly dilated, involuntary discharge of urine, no contracture. The next morning all these phenomena persisted. The patient lay upon her back, no contracture, motionless, mouth deviating to the left, froth issuing from the mouth, and died during the morning visit.

On *autopsy*, nothing was found outside of the encephalon, the ventricles of which were filled by a considerable hemorrhage, which had made its way from the left ventricle into the middle ventricle, the roof of which it had raised, and thence into the right ventricle. There was no alteration of the nervous substance except in the left ventricle, the external wall of which was evidently softened by a process antedating the hemorrhage, but which was not very old. The blood extravasated was recent and semi-coagulated. (Viallet, *Bul. de la Soc. Anat. de Paris*, vol. xxi. 1856, p. 318.)

In another case the brain-substance was universally softened, but the reporter finds himself unable to decide whether the condition was a post-mortem one or not.

As in ordinary encephalic hemorrhage, so here we find two conditions usually present, whose conjoined action tends to bring about the occurrence of an intra-ventricular extravasation of blood: 1, disease or weakening of the vascular walls; and 2, increased vascular tension, whether due to a *vis a tergo* or to a *vis a fronte*.

Degenerations or diseases of the walls of the cerebral bloodvessels seem here quite common; for in twenty-six cases in which their condition is mentioned, in only three are they described as healthy. In the twenty-three cases in which a diseased state was noted, twelve times there was more or less extensive atheroma of the vessels at the base, and presumably of other vessels of the brain; six times there were aneurismal dilatations, the aneurisms being of comparatively large size; in one case it is stated that to a vessel running through the right lateral ventricle, possibly to one of the choroids, a small firm bilobed body was attached, no further information being given of the character of the tumour, which may have been a consolidated aneurism. In one case there was a marked dilatation of a vessel, probably a vein, beneath the tænia semicircularis; in another, varicosity of the bloodvessels of the brain; in still another,

the finer arteries are described as being enlarged; while in one case the carotid is referred to as being dilated. In Abercrombie's case he states that a peculiar diseased condition existed.

As regards the condition of the vessels which are directly concerned in intra-ventricular hemorrhage, but little can be said. The larger vessels of the choroid plexuses may, according to Haeckel, be the seat of various forms of degeneration, such as chronic inflammations, fatty changes, pigmentary and calcareous deposits, dilatations, elongations, etc. He points out as especially noteworthy varices of the vena choroides. According to Fox, "Hemorrhage of the cerebral ventricles may occur from various morbid conditions of the plexus choroides. The plexus may be more vesicular than usual, with vessels greatly distended with blood, and showing ruptures in several places; or, indeed, engorged from any cause that interferes with the normal flow of blood through these vessels." We have seen that they may be affected by aneurismal enlargements, to the rupture of which the hemorrhage was due in two cases quoted. Thrombosis may occur by extension from the sinuses and larger veins. The vessels ramifying on the walls of the ventricles may be much enlarged and dilated, and distended with blood, especially when fluid is collected in these cavities (Hooper), being usually marked in cases of rapidly increasing congenital hydrocephalus (Rokitansky, Förster). The presence of angiomatous tumours, usually appended to the choroid plexuses, has already been mentioned. Cysticerci have been found attached to the choroid plexuses. Broca mentions such a case in a man who died of apoplexy, while two other instances are related by Fischer, where the parasites were attached to these plexuses. The presence of simple serous cysts growing from these vascular membranes is not uncommon in the old; they may be single or multiple, vary much in size, and contain a clear serous fluid. Wilks has found them in cases of chronic atrophy of the brain. In several of my collected cases they were present. Fatty degeneration of the capillary walls being very common in the young, we might perhaps find in this a partial explanation for the relatively frequent occurrence of ventricular hemorrhage at a comparatively early age. But in the one case of this kind in which the condition of the cerebral vessels was determined by the microscope, nothing abnormal could be found.

The exact bearing of the miliary aneurisms, as described by Charcot and Bouchard, on this form of intra-ventricular extravasation I am unable to satisfactorily or positively determine, but the presumption is, that the ventricular vessels resemble the other vessels of the brain in their relation to this form of vascular disease, a presumption strengthened by the following cases:—

CASE 25. Jeanne Lasnier, æt. 82. Apoplexy with incomplete left hemiplegia of sensation and motion. Recovered, but died two years later of pneumonia.

On *autopsy* an ochrous foyer was found with approximated walls, of the size of a large almond, outside of the extra-ventricular nucleus of the right corpus

striatum. Miliary aneurisms were found in the corpora striata, and a similar aneurism in the choroid plexus of the left ventricle. The arteries at the base were not markedly atheromatous. (Charcot and Bouchard, *Arch. de Phys. Norm. et Path.*, tome i., 1868, p. 663.)

CASE 26. Male, aged 72, died Oct. 12, 1865. Capillary ectasiæ were found upon the vessels of the parietes of the lateral ventricles, and hemorrhage into the right corpus striatum. The large arteries were atheromatous. (*Ibid.*, *loc. cit.*, p. 730; observed by Heschl.)

A more direct relation to the subject under discussion can be found in the two cases where primary extravsation took place into the ventricles, in which such miliary aneurisms were actually found. One of these was Brémond's case, which has already been given. Another is by Lamblin. Here the seat of the ectasiæ is unfortunately not noted. In one case, Bright's, we find a great arterial tension described, without, however, any cardiac enlargement, as having always existed, the pulse being remarkable for its force, "having more resemblance to a horse's than to a human pulse;" added to which we find another factor in this case, great exertion and bodily fatigue. In another instance, where bodily exertion is mentioned, we find several other causes whose conjoined action seems to have brought about the fatal extravasation. This was one of Morgagni's cases, sudden changes from hot to cold weather, exposure to the direct rays of the sun, the use of undiluted wines, together with bodily exertion, coincidently existed as exciting causes. In ten cases hypertrophy of the heart was present, but in seven of these we find coexisting degenerations or changes of the walls of the cerebral vessels.

In one patient sudden chilling of the cutaneous surface is noted as immediately preceding the initial symptoms of the attack. Here we must suppose the sudden contraction of the surface capillaries with consecutive engorgement of the internal organs, those of the brain yielding to the sudden internal pressure.

Venous congestion may be suspected in the four cases in which the hemorrhage followed the ingestion of food. In one of these the stomach and intestines were found, on *post-mortem*, distended by raw turnips; and in a second the patient is described as having eaten an enormous dinner the day before; while, in the two others, the attack came on just after partaking a large meal. In Richardson's patient the connection between encephalic venous engorgement and the ventricular hemorrhage can more easily be understood.

Whether or no the blood-changes of Bright's diseases bear any definite relation to primary intra-ventricular hemorrhage, I find myself unable satisfactorily to determine, as in only one instance, a case of extensive kidney degeneration, can it be supposed to have existed. In all but a few cases the condition of the kidneys in the *post-mortem* description is ignored, and hence my cases are useless in the decision of this question.

Arguing from the fact that certain blood-diseases, such as leucocythæmia, idiopathic anæmia, purpura hæmorrhagica, scorbutus, the hemorrhagic dia-

thesis, pyæmia, typhoid fever, and icterus, have been known to give rise to hemorrhage into the brain-substance or meninges, the supposition would be that a similar relation held between them and primary ventricular hemorrhage. Such a presumption is, at least, verified and rendered a certainty in the case of several of these blood-diseases, *i. e.*, leucocythæmia, scurvy, and purpura; cases having already been reported where the two conditions coexisted, the hemorrhage undoubtedly being dependent upon the previous blood affection.

Morbid Anatomy.—The amount of blood extravasated, the situation in which it is found, and the condition in which it exists, vary greatly in the different cases of primary intra-ventricular hemorrhage. As many of the points coming under the head of pathological appearances have already been dilated upon in a previous part of this paper, their extended discussion need not detain us here.

We have seen that in some instances of acute hydrocephalus we find the ventricular effusion which occurs in this disease blood-stained to a varying degree, never to a point distinctly hemorrhagic. However, such are rather to be considered the exception than the rule. Thus Huguenin (*Ziemssen's Cyclopædia*, vol. xii. p. 499) states that "sometimes the fluid (in meningitis tuberculosa) is slightly tinged with blood, and the source of the bleeding will be found in the plexus choroidei." Meigs and Pepper characterize this form of effusion, the sero-sanguinolent, as rare in tubercular meningitis, as does also Hammond. True, such cases can hardly be considered as having attained the dignity or degree of a veritable ventricular hemorrhage; they should rather be deemed instances merely of bloody admixture, the inflammatory trouble having been unusually intense, the escape of blood-corpuscles through the vascular walls probably having occurred without actual solution of continuity, that is per diapedesis. Similar conditions have been observed in other cases of serous inflammation, as in pleuritis, peritonitis, pericarditis, etc., and in fact cases have been reported where actual hemorrhages have supervened dependent upon the inflammatory state directly, and we have seen, as in the case of Goelis, that the same holds true of ventricular hemorrhage. We may here mention the fact that Gendrin speaks of simple cerebral hyperæmia as related to ventricular hemorrhage, affirming that in such cases an augmentation in the cephalo-rachidian fluid occurs to so great a degree that the lateral ventricles become filled with a serum stained by an admixture with a small quantity of blood, and that in some instances this admixture may become so excessive that actual clots may be found in the serum. Such cases he considers actual instances of ventricular hemorrhage. The blood may remain confined to the ventricle into which it is originally extravasated, which it may in part or completely fill; or, by direct continuity of cavity, it may extend into several or all the other ventricles. It is here to be remembered that, although during life the blood may have remained

localized to one or several ventricles, it may become diffused after death throughout the entire ventricular space, and may even escape externally. Hence the difficulty with which we meet in attempting to determine the exact seat and extent of the original extravasation. This applies more particularly to those cases where the blood is found in a fluid state.

If the blood be rapidly and copiously poured out it will cause rupture of the septum lucidum, and thus make its way into the other ventricles by a forced passage; but when more slowly effused it usually follows the course of the normally existing channels. When confined to a single ventricular space, it generally only partially fills that cavity, the hemorrhage, as might be expected, being in such cases slight. It is in one of the lateral ventricles that such a localization of the blood is most apt to take place, the third ventricle being rarely so affected, and the fourth still less so. Thus, of my 94 cases, 24 were confined to one lateral ventricle, 2 to the third, and only one to the fourth. When in a lateral ventricle alone it may entirely fill its cavity, extending into all the cornua, or it may be only found in the body or even in one cornu, usually the descending, around the choroid plexus. In fact small hemorrhages are quite frequently found in this latter situation in the form of an elongated clot curled around its vessels, or more or less firmly attached to this structure. When confined to the third or fourth ventricles they fill their cavities entirely. Large hemorrhages are, however, the rule. The blood poured into one cavity rapidly fills it, distending it sometimes to a very great degree, then passing through the various foramina quickly, it rapidly and successfully invades the others, in turn filling and distending them. If, for instance, the extravasation has primarily occurred into one lateral ventricle, it passes through the foramen of Munro into the third, thence through the other foramen of Munro into the opposite lateral ventricle. This is the most usual course, but frequently the extravasation is far more abundant, and in such cases the blood in addition passes down the iter into the fourth ventricle, at which it may stop, or passing through the foramen of Magendie or the two aperturæ laterales spreads out over the surface of the brain to a greater or less extent. If the hemorrhage first take place into the third ventricle, it may spread laterally into the two lateral ventricles, or, as frequently happens, passes downwards into the fourth, or it may even spread in all directions, filling the entire ventricular space. The most frequent direction taken under these circumstances, that is when the hemorrhage originally occurs into the third ventricle, is downwards into the fourth ventricle. When the extravasation first appears in the fourth ventricle, it generally passes upwards through the iter, but it also sometimes makes its way externally, or even is diffused in both directions.

The degree of diffusion of the blood depends to a great extent upon the amount extravasated. If small it remains confined to a single ventricle;

if larger it spreads to one or more of these spaces; if great it occupies the entire ventricular space; and if excessive it is not only found in all the cavities, but also upon the surface of the brain. This, of course, is modified, by the original seat of the effusion, applying more particularly to that of the lateral ventricles, where hemorrhage of this form is by far the most frequent.

To show the relative degree of frequency and the seat of primary ventricle hemorrhage, and also its relations to the secondary form, I have arranged the following table. The secondary cases were obtained from Durand-Fardel's work already quoted.

	Secondary.		Primary.	
	Cases.	Per cent.	Cases.	Per cent.
In all ventricles	20	30.30	32	34.04
In both lateral ventricles . .	23	34.85	16	17.02
In one lateral ventricle . .	16	24.24	24	25.54
In third ventricle . . .	1	1.52	2	2.13
In third and one lateral . .	.....	.....	3	3.19
In third and fourth . . .	1	1.52	3	3.19
In fourth ventricle . . .	4	6.05	1	1.06
In fourth and one lateral . .	1	1.52	1	1.06
In fourth and two lateral . .	.....	.....	1	1.06
In third and two lateral . .	.....	.....	9	9.58
In third, fourth, and one lateral .	.....	.....	2	2.13
Total	66	100.00	94	100.00

In 19 of my cases the ventricular extravasation was accompanied by meningeal hemorrhage, in only 11 of which can the latter be said to have been directly connected with the former; for in 8 of these cases the blood in the ventricles was found only either in the two lateral ventricles, 4 cases; in the two lateral and the third, 3 cases, and in one case in one lateral ventricle only. Of the 11 cases mentioned, in 9 the extravasated blood was present in all the ventricles, in one in the third and fourth, and in one in the fourth only.

The blood may be found in a fluid, semi-coagulated, or completely coagulated state, or several small clots may exist together with fluid blood. Hammond (*loc. cit.*, p. 89) affirms that "the blood extravasated into the ventricles remains liquid a longer time than when effused into any other part." This statement I do not find borne out by facts; for, although death is usually rapid, generally within twenty-four hours, yet the blood is in the great majority of cases found either firmly or in part clotted. The condition of the extravasation does not depend upon the situation, but rather upon the amount and degree of rapidity with which death has ensued. Small hemorrhages are almost always firmly coagulated, large ones less frequently so. In those cases where death has been instantaneous or

rapid, the blood is, as a rule, in a fluid state; whereas, if death has occurred later on, it is either semi-coagulated or forms a dense firm clot. However, in the large majority of cases it is completely clotted, and in such, if it has been large in amount so as to fill the ventricles, it usually forms a complete cast of these cavities, cornua, foramina, etc.; as, for instance, in Dulles's and Key's and Retzius's cases already mentioned. Where the blood has been poured out into several ventricles and where it is found intermixed, that is, in both the fluid and clotted form, this latter is usually found diffused throughout the several cavities, but in a few instances the clots were found confined to one or two spaces, the fluid blood to the others. Here the possibility of several successive and distinct effusions is to be borne in mind. The clots may be soft and almost gelatinous, firm and hard, or, as in a few cases, almost fibrous. They may be found free in the cavities, or may be agglutinated to the ventricular walls. This latter condition is, however, rather the exception. Their shape of course varies with the amount of blood poured out and with their seat; the small clots being generally elongated and curled around the choroid plexus, the larger ones forming more or less complete casts of the cavities, or, when the hemorrhage is general, a perfect cast of the entire ventricular space.

The fluid blood may consist of pure blood or of an intermixture of serum and blood in varying proportions. It also may remain confined to a single ventricle or may spread to all the others. It usually coexists with clots, but in a few instances fluid blood alone was found.

Where one or several of the ventricles have remained free of blood they are in the majority of cases filled with serum, either pure or more or less blood-tinged, the rule being where hemorrhage has occurred to any amount all the ventricles are filled by blood, but if any remain free they are almost sure to contain serum, those cases only being excepted where the extravasation has been very small in quantity. The ventricular parietes may be perfectly normal or intact; they may be blood-stained from imbibition of blood pigment; they may be lacerated or torn; or may be in a state of softening more or less extensive.

In the large majority of cases absolutely no sign or trace of laceration or other abnormal condition of the ventricular walls can be discovered even on the closest scrutiny. In 70 of my collected cases such was the fact. It is of such that we may most positively speak as undoubtedly primary or immediate; yet as we have already seen there is no doubt that laceration may be secondary to the extravasation. Of the 23 cases where tearing occurred, the laceration in 19 was confined to the walls of the ventricles proper, or to the septum lucidum, not encroaching on the ganglionic masses. The seat, extent, etc., of these lacerations have already been pointed out.

Imbibition of blood-colouring matter with or without coexisting softening of the walls seems to be very rare indeed, at least it is but seldom

mentioned in the records of the cases collected. My impression is that it is a post-mortem affair depending upon the same conditions ordinarily found in autopsies. Still in some few cases it is possible that it occurred during life, more especially where it coexists with laceration or softening.

When we discover a laceration in the parietes of the ventricles, the natural inference would be that it was primary, that is, that it preceded the ventricular extravasation; but the absence of a hemorrhagic foyer in the brain substance connected with it, a normal condition of the brain proper, the coexistence of lacerations at other points in the walls, and more especially the inability to discover in the brain substance any vessel from which the blood might have come, all point to it as secondary to an immediate ventricular hemorrhage. If a ruptured vessel be found in one of these cavities, the matter is settled. However, it is no more than fair to admit that all these conditions, excepting perhaps the last, may exist and yet the extravasation be secondary; thus the blood may come from the rupture of numerous capillaries in the immediate vicinity of the ventricles causing many lacerations and filling up of these spaces. Still such an accident must be very rare. Lacerations are, however, rather the exception, occurring in a small percentage of the cases only, and then involving usually the walls of the lateral ventricles, less frequently those of the third, and rarely those of the fourth. In some instances they involve the septum lucidum or fornix singly or conjointly. Sometimes the septum is simply perforated, sometimes simply torn across, and in a few cases it is completely torn away and destroyed. The same is true of the fornix, though to a less and more infrequent degree. The explanation of these lacerations I have already given, and therefore need not repeat it here. Usually they are slight, generally single, sometimes multiple, two or even more being found at various points, almost always affecting the walls proper of the ventricles, very rarely the ganglionic masses, and then only to a very superficial degree. Mostly of slight depth, they sometimes extend to a distance of two or three lines.

Softening of the walls is rare, but when present may be due to previous disease, or may be dependent upon the hemorrhage directly, which, however, is very infrequent. The possibility of *post-mortem* softening must here also be remembered.

The choroid plexuses may be found pale and anæmic, or congested and swollen, their condition varying greatly, the former seeming, however, to be the rule. The bloodvessels coursing along the walls are generally collapsed, though they also are sometimes dilated and distended with blood.

The blood being extravasated into the ventricles may disappear by absorption completely; its fluid portion may be absorbed, while its solid parts remain undergoing calcareous or other changes; it may, perhaps, induce chronic internal hydrocephalus; it may give rise to simple serous

cysts; it may cause acute ventricular meningitis; or it may remain for a long time almost unchanged and unacted upon.

That blood thrown out into the ventricles may be absorbed is hardly to be doubted in the light of our present knowledge, but the facility and manner of such absorption must, of course, vary somewhat with the amount, situation, etc., of the extravasation. According to Wagner (*Manual of Gen. Path.*, trans. by Van Duyn and Seguin, N. Y. 1876, p. 220) hemorrhages into pre-existing cavities or canals behave in quite a simple manner. In hemorrhages into serous cavities the blood is not rarely entirely absorbed; thus, as in hæmatothorax and hæmatocele, Wilks, Jones and Sieveking, Nothnagel, Huguenin, and others hold the same opinion. Effusions of blood into the pleural cavities, into the pericardial sac, or into the tunica vaginalis have, in not a few cases, been completely absorbed. We have but to mention the experiments of Wintrich to prove the possibility of such an occurrence. He found in animals, in whom an artificial hæmatothorax had been produced, complete absorption of the blood in seven or eight days. Huguenin (Ziemssen's *Cyclop.*, vol. xii. p. 423) affirms that there are a number of cases which show that a comparatively large extravasation, in cases of pachymeningtis interna hæmorrhagica, may be absorbed.

It has been maintained that the blood in ventricular hemorrhage cannot be absorbed (Gendrin). Although this is not true, yet it must be admitted that blood extravasated into the ventricles is but slowly absorbed, and that the rapidity of such absorption varies with the different cavities, being most rapid in the lateral, and probably slowest in the third. To establish this we must look in part to the secondary form for corroborative testimony, as but few cases of the primary form can be deduced in evidence, as death in the large majority of cases rapidly ensues. Roberts states (*loc. cit.*, p. 834) that when venous blood collects in the ventricles, referring to the secondary variety, it is not very readily absorbed, and in many cases becomes organized. Frequently in *post-mortems* on cases which long before have suffered from cerebral hemorrhage, which undoubtedly had ruptured into the ventricles, ochreous patches are found along the ventricular parietes, showing distinctly their hemorrhagic origin. Many such cases have been reported, more especially by Charcot. Besides, cicatrices are not infrequently found on the walls of these spaces, pointing positively to previous laceration and extravasation.

Bright (*loc. cit.*, p. 334) says: "I am inclined to believe that those rounded masses of a yellow colour, which are sometimes detected in the posterior portion of the choroid plexus, are the remains of sanguineous effusions which have fortunately proceeded to no great extent, and the blood has gradually undergone a change analogous to that of the blood effused under the pia mater." Ramskill (*loc. cit.*, p. 423) remarks: "In connection with the choroid (that intra-ventricular appendix of the pia

mater) the adventitious products found have been indurated yellow bodies, the remains of former hemorrhagic effusions," etc. etc. In autopsies it not infrequently happens that fibrous or even calcareous bodies are found appended to the choroid plexuses, almost always those of the lateral ventricles, and, as we must admit with Bright and Ramskill, the existence of such bodies can be explained only on the supposition that they are the remains of old clots which have, in great part, undergone absorption.

As a rule, the clot in primary ventricular hemorrhage is found unchanged, though in some cases, where death has occurred relatively late, it had already begun to undergo changes. Thus, in a case where death took place on the fifth day, the clot is described as having begun to assume a fibrous appearance; in another, death supervening on the twelfth day, the clot is said to have been firm, and partly organized. Usually, however, the blood is found in a simple, unchanged condition, having merely undergone coagulation.

In the few cases in which recovery took place, although death occurred long after from other causes, yet, in every instance remains of the old extravasation were found, bearing distinct signs of hemorrhagic origin. The most striking of these cases is that by Bossu:—

CASE 27. A road labourer, aged 24, generally healthy, but frequently suffering from colds, while sweating profusely, a year ago, lay down on the damp ground. On rising, he complained of extreme lassitude, violent cephalalgia, vertigo, buzzing in the ears, and a pain over the infra-orbital region, which had not disappeared up to the time of his coming under observation. To this was added a facial neuralgia, accompanied by involuntary contractions of the facial muscles of the right side, especially the elevators of the lower jaw, phenomena which became more marked and more aggravated up to the 9th of April, 1855, when he entered the Hôtel Dieu de Lyon.

His symptoms were principally located on the right side of the face, and were as follows: intense infra-orbital pain, buzzing in the ears, amblyopia, diplopia, strabismus convergens, dilatation of the pupils, especially the right, expressionless face, from time to time painful contractions of the muscles of the right half of the face, and twisting of the mouth to this side, embarrassed speech, intelligence and memory apparently intact, decubitus dorsal, general immobility; fixity of look, normal temperature; pulse full, regular, not frequent. There had been some vomiting before entering the hospital. Death occurred a month later. The patient, little by little, fell into stupor and coma, without any new symptoms referable to the extremities being noticed. From time to time he presented symptoms indicating congestion of the brain. The skin of the cheeks and forehead became almost completely anæsthetic, especially on the right side. Calomel, vesicatories, aconite, and bloodletting were the principal measures resorted to, but without benefit.

Autopsy.—Marked redness of the arachnoid and pia mater; infiltration of much reddish serum beneath the meninges on the convexity of the brain. The brain substance rich in blood and firm; membranes at the base opaque, thickened, and covered by a yellowish gelatiniform substance, which also inclosed the commissures of the optic nerves. The lateral ventricles were about three times larger than normal, and were filled with yellowish serum; the fifth ventricle was also dilated, and at the same time filled with serum. The middle (third) ventricle was occupied by a gelatiniform, yellowish, firm mass of the size of a walnut, pressing apart the corpora striata and the thalami, and protruding forward between the corpora mamillaria; and on section showing a red layer, then a blackish layer, presenting, in fact, all the appearances of an old blood clot. The walls of the

third ventricle showed no trace of a laceration. (Bossu, *Gaz. Hebdom.*, tome ii. 1855; and *Canstatt's Jahrb.*, Bd. III. 1856, s. 26; from *Journ. de Méd. de Lyon*, 31 Août, 1855.)

It is a well-known fact that following meningeal hemorrhage cysts may form, and such being the case, remembering the analogy existing between the arachnoid space and the ventricular cavity, why should not the same take place in these latter spaces? Positive facts are wanting, but we know that in not a few cases small cysts are found projecting into the ventricles, which undoubtedly owe their origin to a previous hemorrhage, but whether primarily or secondarily ventricular it is difficult to decide. However, they tend to prove the probability of such an occurrence taking place. The cysts found so often attached to the choroid plexuses are of a different origin, and are in no way related directly to ventricular hemorrhage. Acute inflammation of the lining membrane has certainly in one, and probably in several others, followed the extravasation, and in the few cases in which recovery has taken place, it has been found thickened and vascularized to a marked degree, indicating undoubtedly a chronic inflammatory process. In Bossu's case, a chronic basilar meningitis had occurred, probably by direct continuity of tissue. The following is a well-marked case of acute ventricular inflammation secondary to hemorrhage:—

CASE 28. A female, aged 65. On Aug. 10th, while seated, suddenly seized with vertigo and fell. Incoherence, movements of head painful; mouth deviated; tongue dry; pulse irregular and intermittent; constipation; urine passed involuntarily. 15*th*. An apoplectic attack with coma and stertor. On the following days delirium, mumbling, no paralysis, intelligence preserved, head turned to the left, crying when attempts were made to replace it. Death on the 22d.

Bones of cranium thin and fragile. Pia mater much injected. Brain somewhat soft, but without laceration. In the lateral ventricles about two ounces of coagulated blood. Septum lucidum torn through. Ventricular walls covered by a grayish substance, dense enough to permit it to be raised in shreds, and studded with vascular ramifications, very apparent and gorged with blood. A small clot in the third ventricle. Pia mater red, and injected over the cerebellum. The right vertebral artery, at the point of union with the left, presents a bony tumour of the size of a hazel-nut, which occludes its lumen. The various arteries at the base are calcareous. (Gintrac, *loc. cit.*, from Raikem, *Répertoire d'Anatomie de Brechet.*, tome i. 1826, p. 123.)

That dropsical effusions within the sac of the arachnoid sometimes follow or owe their origin to former hemorrhages into that cavity has long been recognized, and is admitted by such authorities as Legendre and Ramskill. It was long ago claimed by Rilliet and Barthez that the same was true of chronic ventricular hydrocephalus. They pointed out the fact that ventricular hemorrhage might result finally in a simple serous accumulation in these spaces, and even quoted a case in support of this. I have been unable myself to find such a case, but remembering the resemblance between those two great serous sacs, the arachnoid and ventricles, in other respects, I can see no reason why such should not be true of the ventricles.

It will, from the foregoing, be seen that the possible changes within the

ventricles following an effusion of blood, differ in no essential respect from those occurring within the brain substance or upon the surface. The blood may remain almost unchanged, may be partially or completely absorbed, may terminate in cystic formation, or any other of the changes known to take place in either meningeal or cerebral hemorrhage proper.

In a certain number of cases multiple effusions exist, that is, with the ventricular extravasation we find sometimes one, sometimes several other points of effusion in the brain substance, as in cases by Jackson and Abercrombie, and in my own patient. In a case by Dr. Cheyne there were three distinct clots, one in the substance of each corpus striatum, and one in the third and fourth ventricles. In my own case, in addition to the ventricular effusion, a clot the size of a large pea was found in the centre of the pons, surrounded on all sides by normal brain substance, and having absolutely no connection with the blood in the ventricles. In some cases, numerous spots of punctate extravasation scattered throughout the brain have occurred. The possibility of the coexistence of meningeal and ventricular hemorrhage has already been referred to, and probably actually did occur in eight cases.

The changes observed in the meninges are various and inconstant. In a number of cases the dura mater was found more or less firmly adherent to the bones. The sinuses were usually filled and distended with blood, generally fluid but sometimes clotted, rarely were they collapsed and empty. The arachnoid was not thickened or opaque, except perhaps in a few cases where death occurred later on. Sometimes flakes of lymph-like deposit were found, probably indicating a meningitis, such cases being among those where the fatal termination was delayed. Serous effusion, either simple or blood-stained, is common, while the existence of blood over the meninges, usually due to escape from the ventricles, has already been repeatedly referred to. The most common condition existing in the meninges is congestion more or less intense, usually general, that is, affecting the entire surface of the brain; but in a few instances it is confined to one part or one side of the brain, thus taking place in those instances where the hemorrhage is small. In quite a number of cases the membranes are absolutely and perfectly normal. As regards the brain itself, this, with the exception of the occasional laceration and the morbid appearances depending upon the pre-existing morbid conditions, presents but few noteworthy changes. When such do occur they consist in a simple congestion, the puncta vasculosa being increased in number, and standing out boldly. Sometimes the brain is anæmic and œdematous, but this seems to be rare. Occasionally, though very infrequently, one side of the brain will be found congested, the other anæmic; this latter affecting the side on which the hemorrhage has occurred, for this condition when present occurs only where the extravasation has remained unilateral. Flattening of the convolutions sometimes exists. In quite a number of cases the brain sub-

stance will be found in a perfectly normal and absolutely unchanged state.

The associated morbid changes in the various organs and viscera of the body are exactly similar to those taking place in the ordinary form of cerebral hemorrhage. We find them the seat of various organic changes, and even affected by ecchymoses or hemorrhages, more especially the lungs; —conditions, since the resemblance is in every respect perfect, which need no recapitulation here.

Diagnosis.—Usually, without the previous existence of premonitory symptoms, while at rest or moving about, generally suddenly, but sometimes with more or less degrees of slowness, the attack shows itself. It may be ushered in by symptoms of apparently slight import, or they may be so violent and overwhelming as to terminate rapidly or perhaps almost instantaneously in death. The mildness or violence of the onset, however, is in no way related, as a rule, to the subsequent course of the disease. Vague symptoms may be followed by death in a few minutes, as, for instance, in a case recorded by Bright; whereas the most violent onset may only terminate fatally after several days, as occurred, for example, in Abercrombie's case. The attack may open with convulsion, or this may be delayed for some hours, convulsion at some time being the rule, soon to be followed by partial or complete coma, paralysis, usually of one-half of the body, contracture, either in the form of trismus or affecting one or all the extremities, suffused eyes, dilated or contracted pupils, congested or pale face, stertorous respiration, slow, full, regular pulse, vomiting,—in fact, that collection of symptoms recognized as indicative of the apoplectic condition. Death usually soon follows, or slight improvement may take place, only to be again followed by recurrence of the symptoms with greater violence and speedy death. Where life is prolonged for some days, the actual signs of the attack may give place to those of brain inflammation, delirium, restlessness, drowsiness, gradually passing into stupor and coma, febrile movement, constipation, etc. Death, however, is not the invariable rule, and in the few cases of recovery, the paralytic symptoms, if such have existed, are more or less permanent, corresponding in this respect with the ordinary form of encephalic hemorrhage. There is no single symptom which can be considered as pathognomonic of primary intra-ventricular hemorrhage. In the present state of our knowledge of the subject, a positive diagnosis in many cases is, of course, impossible. But given a patient with sudden complete coma, partial or complete paralysis, or even without any paralysis at all, contracture and convulsion, with rapidly following death, in fact that collection of symptoms which we have come to recognize under the term "apoplexie foudroyante," the probabilities are that we are dealing with a primary intra-ventricular extravasation. Yet such a diagnosis is in the highest degree problematic, though, I think, still justifiable, since there is only one condition whose symptoms closely

approximate those of this complaint, meningeal hemorrhage. Nevertheless, there are several other lesions which give rise to very similar symptoms; secondary ventricular extravasation, cerebral hemorrhage, and, perhaps, rupture of an abscess in the ventricles.

Secondary ventricular hemorrhage is most common in the adult, while the primary form, as we have seen, mostly attacks the young and the old. The one is preceded by symptoms referable to a hemorrhage into the brain substance, and a distinct interval can be observed between the symptoms of the brain extravasation and those dependent upon the rupture of the blood into the ventricles, an accident indicated by convulsions, powerlessness, and rapid coma. No such sequence of symptoms is observed in the primary form. Contracture, which by many is considered characteristic of the secondary variety, is certainly not so of the primary. It is rather by a collection and grouping of symptoms than by a single symptom that we shall be enabled to arrive at a conclusion. Even when contracture is present, too much reliance must not be placed on it, since it occurs not infrequently in other forms of intra-cranial disease, especially in the meningeal. Durand-Fardel mentions four cases of extravasation into the brain without rupture into the ventricles in which it was present. Jaccoud and Hallopeau speak of it as occurring with hemorrhage into the pons. Popham (*Dublin Quarterly Journ. of Med. Sc.*, Aug. 1862) relates a case of abscess of the corpus rhomboideum of the cerebellum in which muscular rigidity of both lower extremities existed, and quotes another case from Dr. Bright, where there was disease of the rhomboid body. Still, such instances are rare, and according to Durand-Fardel contracture is indicative of escape of blood into the ventricles from a foyer in the brain substance. Therefore, where this symptom ensues, if it has been preceded by symptoms of cerebral hemorrhage, we may exclude a primary ventricular extravasation, and diagnose one of the secondary form.

We may tabulate the principal distinctive points in the differentiation of primary ventricular hemorrhage and the ordinary cerebral form, as follows:—

VENTRICULAR HEMORRHAGE.	CEREBRAL HEMORRHAGE.
Common in the very young and the old.	Most frequent during middle life.
Onset very rapid and violent.	Onset slower and less violent.
Coma usually most profound from the very beginning.	Coma generally not so profound.
Convulsions common.	Convulsions rare.
Contracture frequently present.	Contracture seldom observed.
Paralysis frequently absent, sometimes general.	Paralysis the rule, generally hemiplegic.
Transient improvement or remission of symptoms not uncommon.	Transient improvement far less frequent.
Seldom ends in recovery.	Often ends in recovery.
Death rapid, frequently within a few hours.	When fatal, life is usually prolonged for several days.

As between meningeal and primary ventricular hemorrhage we have the following points of differentiation. Still it will be found a very difficult matter to discriminate between these two conditions, which approach each other in so many respects, especially as regards etiology and symptomatology, yet these few points may nevertheless be deduced in this direction:—

VENTRICULAR HEMORRHAGE.	MENINGEAL HEMORRHAGE.
Such history absent.	When occurring in the new-born, a history of a difficult labour; in the adult, a history of an injury.
Premonitory symptoms not uncommon.	Such symptoms usually absent.
Pain in the head not frequent.	Pain in the head frequent (Ramskill).
Paralysis when present, as a rule not general, usually hemiplegic.	Paralysis commonly general, hemiplegia exceptional (Nothnagel).
Deviation of mouth and tongue more common.	Deviation of mouth and tongue of rare occurrence (Ramskill).
Contracture very common.	Contracture, though frequent, less common.
Convulsions, although frequently present, not so common.	Convulsions the rule.
Vomiting not so common.	Vomiting very common.
No such symptoms.	Symptoms of secondary meningitis with high fever, about the third or fourth day.
Death rapid.	Life is prolonged for several days, as a rule.

A careful examination of the histories of twenty-four cases in which rupture of a cerebral abscess had occurred into the ventricles has convinced me that no great difficulty need be encountered in differentiating between such an accident and ventricular hemorrhage properly so called. One of our best guides is the etiology of the former, since in the majority of cases we will obtain a history of an injury received, or the patient has suffered from chronic otitis media, or is the victim of pyæmia, conditions found but seldom to obtain in ventricular hemorrhage. Besides, the history preceding the attack points in most of the cases to the previous existence of suppuration within the cranial cavity. Headache, usually localized, generally existing for a considerable period of time, is a very prominent symptom of abscess, and not of ventricular hemorrhage; while convulsions, though frequent in the former, are not so common as in the latter. Contracture is rarely observed. Delirium is very common, in fact, it seems to be one of the characteristic symptoms following rupture of an abscess into the ventricles, probably depending upon a secondary inflammation of the ventricular parietes. Another important sign, wherein a marked difference can be observed between these two conditions, is the course of the temperature: that of ventricular hemorrhage, resembling that consecutive to hemorrhage into the brain substance; while that of ruptured abscess is closely allied to that indicative of purulent formations anywhere. This I consider a very trustworthy and reliable differential

point. In ruptured cerebral abscess, death is never so sudden as in ventricular hemorrhage, being almost always delayed for several days.

Taken as a whole, the symptoms produced by the rupture of an abscess into the ventricles seem to resemble more closely those of an ordinary cerebral hemorrhage than of a ventricular extravasation.

Prognosis.—Most authors agree in the statement that extravasation of blood into the ventricles is uniformly and rapidly fatal.

Primary ventricular hemorrhage is almost always fatal. I use the terms "almost always" advisedly, notwithstanding the assertion of Foville that extravasation of blood into the ventricles is *always* fatal; since in several of my collected cases life has been prolonged indefinitely, and in some other cases actual cure must have occurred. The degree of danger and the rapidity with which death ensues vary with the amount, seat, and rapidity of the extravasation.

The danger to life is greatest in cases where the hemorrhage is into the fourth ventricle primarily, such attacks proving fatal in a few minutes. This is not surprising when we remember the important relations of this space to the vital centres in the medulla. As far as I am able to determine, recovery has never followed extravasation into this ventricle. Hemorrhage into the third ventricle is next in degree of fatality. Here death is usually delayed, though following with unusual rapidity when compared with cerebral hemorrhage. Still when compared with that into the fourth ventricle, it may be said to be relatively slow. Recovery may and has taken place, as in Bossu's case, death occurring a year after from an extensive basilar meningitis, chronic in character, dependent upon the previous hemorrhage. The least dangerous form is that taking place into the lateral ventricles. Death, as a rule, follows only after several hours, and not infrequently may be delayed several days. Recovery is relatively frequent, as shown by the numerous recorded cases of fibrous or calcareous masses, the remains of old clots found about the choroid plexuses of these spaces, as also by the two of my collected cases where actual and undoubted hemorrhagic remains were found. In such cases the extravasation has doubtless been small.

Large hemorrhages are generally rapidly fatal, small ones slowly. Thus when general, involving all the ventricles, death quickly ensues; whereas in those cases where it has remained confined to one ventricle, especially if this be one of the lateral, it is somewhat delayed. This rule does not apply to the fourth ventricle, but even here it would seem that a small extravasation may cause death only slowly.

According to Trousseau, apoplexy, in the true meaning of the term, is rare in cerebral hemorrhage; but the contrary seems to hold in intraventricular extravasation; for in at least eight of my collected cases death was almost instantaneous. "Death by intra-cranial hemorrhage is never so exceedingly rapid as it often is from these sources." With this

last statement I am forced to differ as regards the ventricular form of cerebral hemorrhage, since the fact stands that instantaneous death has been induced by it in not a few cases. As before remarked, death is generally rapid, relatively far more so than in simple cerebral apoplexy, and often it is immediate.

In my 94 cases the time of death is noted in 70. Of these 65.7 per cent. died within twenty-four hours, and of them all but three are reported to have expired in less than twelve hours, thus showing the great rapidity with which this disease proves fatal. Rapid death may, therefore, be said to be the rule, delayed death the exception. The cases of instantaneous or rapid death are those in which the blood has originally been poured out into the fourth ventricle, or has succeeded in reaching it from the other ventricles, usually in cases where the hemorrhage has been excessive. Though this is the rule, there are a few exceptions in which the blood has remained confined to one or both lateral ventricles, yet death rapidly ensued. In those which are less suddenly fatal, the hemorrhage has usually been less abundant or less widely diffused. When death has occurred after the fifth or sixth day it has generally been due to some secondary cause, usually a surface or ventricular meningitis, or perhaps to a recurring hemorrhage, just as in cases of meningeal hemorrhage.

In the three cases in which recovery took place the extravasation occurred into one ventricle only; in two into one lateral ventricle, and in the third case into the middle ventricle only.

ARTICLE IX.

QUANTITATIVE DETERMINATION OF UREA BY ALKALINE HYPOCHLORITES AND HYPOBROMITES.

By THEO. G. WORMLEY, M.D., Professor of Chemistry in the University of Pennsylvania.

THE determination of the amount of urea present in the urine by the volume of nitrogen evolved under its decomposition by sodium hypochlorite, was first proposed by Davy (*Philosoph. Mag.*, 1854, p. 385). According to his observations, the quantity of nitrogen evolved corresponded very closely to the calculated amount present in the urea. But according to the observations of M. Leconte (*Chem. Gaz.*, 1858, 433), with a different form of apparatus, under the action of this reagent only about 92 per cent. of the nitrogen is evolved.

Messrs. Russell and West proposed to substitute for the hypochlorite an alkaline solution of sodium hypobromite, and advised a special form of apparatus for the application of the test (*Jour. Chem. Soc.*, Aug. 1874, and *Am. Jour. Med. Sci.*, April 1875, p. 531). These observers however obtained only about 94 per cent. of the total nitrogen.

Under the action of either of these reagents, as is well known, the urea is resolved into carbon dinoxide, water, and free nitrogen, thus:—

$$CN_2H_4O + 3NaBrO = CO_2 + 2H_2O + N_2 + 3NaBr.$$

Theoretically, therefore, the whole of the nitrogen should be evolved, but it is generally admitted that in practice this is not the case. According to at least one observer, this loss is due to a portion of the nitrogen being retained as a cyanate; whilst according to another it is retained as a nitrate.

To remedy this defect, M. Mehu advised to mix either glucose or cane-sugar with the urine before adding the hypobromite, when the whole of the nitrogen would be set free (*Compt. rend.*, 1879, 175). But, according to M. Esbach (*Ibid.*, 417), and also to M. Jay (*Bull. Soc. Chim.*, 1880, 105), a solution of glucose *alone* evolves some gas under the action of the reagent. Again, M. Fauconnier obtained in the presence of glucose, from a given quantity of urea, the theoretical amount of nitrogen; whilst in the presence of cane-sugar he obtained only 94 per cent. of the total nitrogen (*Ibid.*, 102).

According to my own experiments, when a solution either of cane-sugar or of glucose is mixed, at least in certain proportions, with the hypobromite reagent, without the presence of urea, the temperature of the mixture increases and its yellow colour is gradually discharged, but *no gas is evolved.* When 1 gramme of cane-sugar in 5 c.c. water was added to 10 c.c. of the reagent (prepared as stated hereafter) at 21.1° C. (70° F.), the mixture at the end of twenty-five minutes acquired a temperature of 30° C. (86° F.), after which the temperature slowly fell.

In a similar experiment with glucose, the temperature increased from 21° C. (69.8° F.) to 35.5° C. (96°. F.) in ten minutes, which was the maximum reached. It was also observed that the presence of large excess of glucose entirely prevented the decomposition of urea by the hypobromite reagent.

For the purpose of examining the accuracy of this test for urea, without the presence of cane-sugar or glucose, the form of apparatus, at least in principal, advised by R. Apjohn (*Chem. News*, Jan. 1875, 37), was employed. This consists of a wide-mouthed bottle in which is placed the reagent, and also a small test-tube, for containing the urea solution, of about 10 c.c. capacity and of such length as to stand inclined in the bottle. The mouth of the bottle is closed with a rubber stopper carrying a glass tube, by which it is connected by rubber tubing to a graduated burette divided into $\frac{1}{10}$ c.c. and suspended in a long cylinder of water from an adjustable arm.

The urea solution is placed in the small tube within the charged bottle, the apparatus closed, and when there is no longer any change in the height of the column of liquid within the graduated tube, this is so adjusted that the surface of the contained liquid exactly coincides with that in the cylinder. This point, the temperature, and in exact experiments the

barometric pressure being noted, the urea solution is mixed with the reagent by inclining the bottle and gently shaking the mixture. As the evolved nitrogen collects in the graduated tube, the latter is gradually raised to relieve the contained gas from the increased pressure. When the evolution of gas has entirely ceased and there is no longer any change in the volume of gas, the tube is finally adjusted and the exact volume noted. The reagent employed was prepared, as first advised by Messrs. Russell and West, by dissolving 100 grains caustic soda in 250 c. c. water, and adding to the cooled mixture 25 c. c. bromine. In applying the reagent it was diluted with a volume and a half of pure water.

With this arrangement a series of experiments was performed employing 1 c. c. of a standard solution of pure urea varying in strength from one to six per cent., variously diluted, and added to varying quantities of the reagent. These experiments gave different results, in some only about 90 per cent., and even less, of the nitrogen being evolved, while in others a larger proportion was obtained, and in still others the *whole* of the nitrogen was set free. It was finally observed that under certain conditions the whole of the nitrogen is uniformly eliminated. These conditions are:—

1. The reagent should be freshly prepared.
2. The urea solution should be wholly added to the reagent, none of the latter being allowed to mix with the urea solution in the containing tube.
3. The amount of urea operated upon should not exceed one part to about twelve hundred parts of the diluted reagent.

Moreover, the diluted urea solution should be added in small portions at a time to the reagent, thoroughly mixed, and the effervescence allowed to cease before any further addition of urea. So, also, it would appear, at least when comparatively large quantities of urea are present, that the surrounding temperature should not be less than about 20° C. (68° F.).

In the practical application of the test, if a two per cent. solution of urea is under examination, 1 c. c. of the solution, diluted with from 5 to 10 c. c. water, is placed in the containing tube, and the mixing bottle charged with 10 c. c. of the reagent diluted with 15 c. c. water; whereas, for 1 c. c. of a four per cent. solution of urea, similarly diluted, not less than about 50 c. c. of the diluted reagent should be employed.

In a final series of experiments, in which the above conditions were observed, the temperature being noted to $\frac{1}{10}$ degree, and the results reduced to the standard temperature (0° C.) and barometric pressure (760 mm.), the following average results were obtained:—

Urea employed.	Nitrogen evolved =
10 milligrammes,	9.98 mgrm. urea.
20 "	20.07 "
30 "	29.95 "
40 "	39.88 "

In these experiments it was assumed that 1 gramme of urea contains 372 c. c. nitrogen, measured at 0° C. and 760 mm. barometric pressure; or, that each c. c. of nitrogen evolved, measured under the conditions stated, represented .002688 gramme urea.

During these investigations it was observed, in cases in which the whole of the nitrogen was not evolved, that so long as the conditions remained the same, the relative proportion of the nitrogen eliminated was pretty uniform. Hence, if the volume of nitrogen evolved from a known quantity of urea under certain conditions, or by a given form of apparatus, be determined, the result may be taken as the basis for the determination of the urea in the urine with sufficient accuracy for clinical purposes.

ARTICLE X.

ANÆSTHESIA OF THE CORNEA AND ITS SIGNIFICANCE IN CERTAIN FORMS OF EYE DISEASE

By JAS. L. MINOR, M.D., Assistant Surgeon to the New York Eye and Ear Infirmary.

FOR several years past, Dr. Noyes has been in the habit of testing the sensation of the cornea in many diseases of the eye, and the following cases, occurring in his practice, will serve to illustrate a class in which anæsthesia was found. Such cases are by no means infrequent—all ophthalmologists are familiar with them; but, taken singly, as they usually occur, one is apt to be struck only with their obstinate character, whereas, collectively, a group of symptoms is presented, which clearly places them in a class peculiar to themselves—and thus by calling attention to their existence, it is hoped that closer observation will lead to a better understanding concerning them. Brief histories of the cases will be given, after which the peculiar features will be pointed out, and the deductions to be drawn therefrom presented. The test of the degree of corneal sensibility was to touch the surface with a pledget of cotton rolled to a point, or with a fine brush, and comparison was always made with the other eye. In all cases quoted there was decided difference in the tolerance of the two eyes. The diseased one might be conscious of being touched, but its sense of feeling was manifestly blunted.

CASE I.—A male, 35 years old, robust and healthy, has suffered for several months with a cold in his left eye, which has resisted all treatment. Pain has been present, frequently severe, usually in the eye, but occasionally in the supra-orbital region, and twice involving the whole left side of the face. Present condition, conjunctivitis:[1] maceration of the epithe-

[1] The term conjunctivitis, as used with these cases, is not strictly correct. The condition is one of vascular paralysis, distinct from, but associated with inflammation.

lial layer of the cornea, with small facets at its periphery; anæsthesia of both the cornea and conjunctiva. Amongst the remedies used may be mentioned the various astringents, atropia, cold applications, hot fomentations, corneal paracenteses, protective bandage, hypodermic injections of pilocarpine, Turkish baths, quinia, arsenic, etc. After remaining under treatment for four weeks, the patient passed from observation with very little improvement in his condition. The patient had a carious and painful left molar, the removal of which did not influence the eye disease.

CASE II.—A female, 27 years old, has been subject to colds in the eye for the past year. The present attack commenced several weeks ago, and for the last two days pain in and around the eye has been distressing. Present condition, conjunctivitis; keratitis; and extensive erosion of the epithelial layer of the cornea; anæsthesia of the cornea; tension of globe reduced; no iritis, but a contracted pupil, which responds imperfectly to atropia. She was treated for a period of nearly five weeks, both locally and generally, with but moderate improvement. The epithelial layer of the cornea has been regenerated. The sensation is still diminished, but not so markedly as when first seen.

CASE III.—A robust and healthy man, 60 years of age, has had a cold in the right eye for nearly three weeks, and for the last few days severe pain in the right side of the face and head. Present condition, conjunctivitis; erosion of the corneal epithelium at its inner margin; anæsthesia of the cornea and conjunctiva; no iritis, but a contracted and sluggish pupil; tension of the globe reduced. There is partial anæsthesia of the parts supplied by the right fifth nerve. Local treatment proved rather irritating than otherwise, and general remedies were unsatisfactory, until, at the expiration of three weeks' treatment, the fluid extract of gelsemium was administered. Under its influence the pain disappeared, the inflammation subsided, and sensation returned. Morphia in large doses had failed to relieve the distressing pain. The pain, though nearly always present, was much exaggerated between the hours of two and five A. M., which led to a suspicion of malaria. Quinia did not relieve.

CASE IV.—A male, 48 years old, had two months ago an attack of right facial neuralgia, with swelling of that side of the face. As this condition subsided (in five or six days), the right eye became inflamed, which inflammation, soon passing away, left the sight impaired. Several relapses were experienced. Present condition, conjunctivitis; keratitis; anæsthesia of the cornea and conjunctiva; sensation of the right side of the face diminished. The treatment was both local and general. The course was tedious and prolonged. This patient had seven carious tooth-roots, the removal of which did not influence the disease.

CASE V.—A male, aged 57, brings a note from his family physician stating that he has recently suffered from an attack of facial erysipelas, limited to the left side of the face. The left eye was slightly inflamed before the erysipelas was experienced, and became much worse during its existence. The erysipelas (which was really an attack of herpes zoster ophthalmicus) has subsided, leaving the eye inflamed and painful, with neuralgia of the adjacent nerves. Present condition, conjunctivitis; slight keratitis; anæsthesia of the cornea and conjunctiva; a small and sluggish pupil (non-inflammatory); the globe reduced in tension; dimin-

The sodden appearance, with enlarged and tortuous vessels coursing along the conjunctival surface, presents a characteristic condition, and is quite different from the velvety swelling seen in pure conjunctivitis.

ished sensation, with a feeling of numbness in the parts supplied by the left fifth nerve. On the left side of the nose and forehead herpetic scars, some of which have not entirely healed, are observed. Recovery slow; local treatment unsatisfactory. Quinia was apparently beneficial; fluid extract of gelsemium relieved the pain, and under its influence sensation slowly returned, and the inflammatory symptoms subsided.

CASE VI.—A male, aged 25, suffering from conjunctivitis and anæsthesia of the cornea, received local treatment for four days without benefit, when it was found that he suffered from supra-orbital neuralgia, with tenderness of that nerve, and furnished a history of malarial poisoning. He was immediately placed on large doses of quinia, and reported himself in two days as about cured; sensation in the cornea having returned.

CASE VII.—A male, 30 years old, has ulcerative keratitis, an anæsthetic cornea, with neuralgia and tenderness of the supra-orbital nerve, and a history of malarial poisoning. The treatment was paracentesis of the cornea, atropia, boracic acid solution, protective bandage, and large doses of quinia. Two days later he was much better, and on the fifth day after he was first seen he was allowed to return home about cured; the cornea having regained its sensibility.

CASE VIII.—A male, aged 47, has conjunctivitis in the left eye, with minute corneal opacities, anæsthesia of the cornea, supra-orbital neuralgia and tenderness, with a malarial history. The ordinary local treatment was adopted, and large doses of quinia administered. The patient was not again seen for several weeks, when he voluntarily stated that improvement commenced as soon as "buzzing in the ears" was noticed. The cornea is sensitive; the conjunctivitis has nearly disappeared, and no trouble exists with the supra-orbital nerve.

CASE IX.—A male, aged 28, has conjunctivitis of a week's standing; the conjunctiva and cornea are both anæsthetic. The pupil is small and sluggish (non-inflammatory). There is neuralgia and tenderness of the supra-orbital nerve. Improvement commenced and continued under the influence of quinia, and simple local remedies.

CASE X.—A male, aged 35, has been subject to attacks of sore eyes for the past nine years. The first occurred in 1871, the second in 1876, the third in 1879, the last and final one in 1880. This attack commenced a week before he was seen, and was preceded by a well-marked chill. Severe facial neuralgia on the same side remained after the chill passed off, and was present when seen, as also was tenderness of the supra- and infra-orbital branches of the fifth nerve. The conjunctiva was inflamed; the cornea nebulous from previous inflammation, and anæsthetic. Pupil small and sluggish, but iris not inflamed. Local treatment was adopted, and quinia administered. He was seen four days later, and was then found to be much better. Unfortunately he was not seen again.

I think that we are justified in placing these cases in the category of neuro-paralytic affections, and in locating the lesion upon which they depend frequently in the Gasserian ganglion. The lesion may be more or less circumscribed, involving fibres of the sensitive, vaso-motor, and trophic varieties, whose destination is the eye; or, it may invade a more extensive territory, viz., an entire branch of the trifacial, or the trunk itself.

Anæsthesia of the cornea existed in every case. It was found in the

conjunctiva in five cases; and partial anæsthesia of the corresponding fifth nerve presented itself in three cases.

Anæsthesia of the cornea was only one factor, and did not in these cases bear any special relation to either the severity of the attack, or the inflammation which frequently existed in this structure. Anæsthesia of the cornea existed in six cases without keratitis; and in those cases that presented both anæsthesia and inflammation, complete protection of the eye did not materially alter the course of the disease. It may be mentioned that two classes of corneal anæsthesia have been excluded. First, those in which the anæsthesia is dependent upon inflammatory swelling of the conjunctival and corneal tissues, whereby the nerve-fibres are compressed, and their functions impaired or destroyed; second, the well-marked cases of neuro-paralytic ophthalmia which accompany complete paralysis of the fifth, and in which the corneal anæsthesia is complete, and is associated with central trophic lesions.

Vaso-motor disturbance was shown by paralysis of the bloodvessels of the conjunctiva and iris. Dilatation of the vessels of the iris is sufficient to maintain an obstinately contracted pupil, and to enable the iris to withstand remarkably the influence of atropia employed in full doses: and that too when no pupillary adhesions or exudations existed.

Trophic changes manifested themselves through a disturbance in the nutrition of certain structures of the eye (conjunctivitis, infiltration, inflammation, and ulceration of the cornea, etc.), due to central nervous lesions.

Diminished tension of the globe was noted in three cases. It is not stated as having been increased in any—and was probably more frequently present. This reduction may have been due to either mechanical or neurotic influences. The character of the neuralgia indicated both its connection with the eye trouble and its central origin.

In locating the primary lesion in the Gasserian ganglion, pathological deductions are drawn from physiological experiments.

"The Gasserian ganglion forms a flattened crescentic mass of gray matter mingled with the fibres derived from the sensitive root (of the fifth). According to Kölliker the fibres of the sensitive root simply pass through the gray matter of the ganglion, making no anatomical connections with its nerve cells, while the ganglion cells, which are unipolar in form, give off fibres in a peripheral direction. Thus the branches of the fifth nerve beyond the ganglion contain, besides the fibres of the sensitive root, others, which have their origin from the ganglion itself. . . . . If the fifth nerve be divided within the cranium by a section passing in front of or through the Gasserian ganglion, a change of nutrition often follows in the cornea, by which its tissue becomes the seat of vascular congestion and ulceration . . . immediately after the operation, the pupil is contracted, and the conjunctiva loses its sensibility. . . Although these consequences usually follow division of the fifth nerve when performed at the seat of the Gasserian ganglion, or between it and the eyeball, they are either retarded in their appearance or altogether wanting when the section is made posterior to the ganglion, between it and the base of the brain." (Dalton.)

It is a fact that the fifth nerve does receive sympathetic fibres, before and after its passage through the Gasserian ganglion, and that implication of these fibres and of the ophthalmic ganglion may induce nutritive and other changes in the eye. Under such circumstances, however, the manifestations will be more restricted and less constant than those dependent upon lesions in the Gasserian ganglion, and such as were presented by some of the above related cases.

It is interesting to observe the similarity which exists in all of these cases. Case V. was a typical one of herpes ophthalmicus. Case IV. was probably the same disease. The intimate pathological relation between all of these cases is forcibly suggested. Another interesting fact is that the last five cases presented supra-orbital neuralgia, with tenderness of this nerve, and histories of malarial poisoning. These cases were cured of all of their maladies by the energetic use of quinia. Cases I. and IV. had carious teeth, the removal of which did not benefit the condition of the eyes.

In regard to the *diagnosis*, the symptoms presented are sufficiently distinctive. The only point that it is important to observe is the etiological relation that malaria bears to many cases. With neuralgia and tenderness of the supra-orbital or other branches of the fifth pair, and a malarial history, we are justified in diagnosticating "malarial" conjunctivitis, or keratitis.

The *prognosis* is rather conjectural than otherwise in these cases not malarial. The duration may be roughly stated as from two to six weeks, and relapses are to be anticipated. If malarial, the prognosis is favourable, and a cure may be effected in a few days.

Local treatment proves of little benefit. Hot fomentations are usually pleasant and grateful to the patient. Weak astringents, or boracic acid, are sometimes well borne. Keratitis or iritis would, of course, call for atropia. The iris, however, manifests little reaction to atropia, whether inflamed or not. Paracentesis of the cornea does not seem beneficial; a protective and pressure bandage is indicated if ulceration is present, otherwise it is not important. Of anodynes, which are invariably called for, gelsemium is certainly the best; and following the views of Dr. Prout, of Brooklyn, I prefer to combine it with morphia, with an idea of lessening the dose, and producing a more beneficial effect than either given separately would produce. In malarial cases quinia should be freely administered until cinchonism is produced. In a case not related here in which suppurative keratitis was accompanied with severe pain, both in the eye and distribution of the supra-orbital nerve, twenty grains of quinia three times a day relieved the pain and caused a subsidence of the inflammation. If improvement does not ensue after using it for three days, it will be unnecessary to pursue that treatment longer. Among the remedies which

might have been used in the less successful cases is the constant current of electricity.

Gelsemium is not a new remedy in ophthalmic practice. The late Dr. Hildreth, of Chicago, himself a victim to a fatal overdose of the drug, employed it extensively in his eye practice. Galezowski, of Paris, now advises its use, and has found it a valuable addition to ophthalmic medicine. The beneficial action of gelsemium in affections of the fifth nerve is a well-attested fact, and this action will account for the improvement which followed its administration in these cases. The best form is the fluid extract, and this should be a reliable preparation (Squibb's). The dose should be sufficient to produce and maintain its physiological effect to a very moderate degree. Commencing with five drops every two or three hours, the dose may be continually increased as the system becomes less susceptible to its influence; a sixteenth or an eighth of a grain of morphia much enhances its action. It is well to remember that the drug should be given with care, and its effects assiduously watched; a cumulative effect is sometimes observed, when alarming symptoms supervene upon the use of small doses which have been kept up for a considerable time. Were it not that malaria has heretofore been charged with producing just such affections as have been related, one might have some reluctance in bringing forward that agent for renewed etiological honours; and in referring the primary lesion, in these cases, to a neurotic disturbance, we but follow the views adopted by previous observers.

ARTICLE XI.

RETENTION OF THE MENSES, CAUSED BY IMPERFORATE HYMEN. REPORT OF TWO CASES WITH SOME REMARKS. By LOUIS W. ATLEE, of Philadelphia.

MARY P., sixteen years of age, tall and thin, but with no appearance of ill-health, was brought by her mother to my father's office May 17, 1881. She resided in a healthy place near the city, and worked in a woollen mill, which she said was well ventilated and not dusty.

She urgently demanded relief from unbearable pains in the lower part of the belly, attended by frequent inclination to pass water, which at times was very difficult to accomplish, and an almost constant desire to empty the lower bowel, in fact she had to be shown the privy almost as soon as she entered the office. This condition of things had begun some months before; it was getting worse, and every few weeks for a period of four or five days it was aggravated very much. When asked, her mother said her daughter had never had any show of monthly sickness, or sign of bloody discharge.

This case of amenorrhœa was attended by symptoms so special as to call for a direct examination of the genital organs in order to find out if some

malformation did not exist that prevented the menstrual excretion. There was regular periodical monthly return of expulsive pain in a girl about the age of puberty, and with other symptoms of that period of life.

When attempt was made to pass the finger between the labia it was found to be impossible. It felt as if a very tense cyst with a thick wall blocked up the vaginal canal. The finger passed into the rectum, the gut was found to be pressed back very firmly by an elastic mass, that felt like a thick bladder filled to its utmost limits by a dense fluid. Ocular examination showed that no vaginal orifice existed; and a smooth red membrane existed there, that shut it up. This projected forwards, so that it might be likened to a knuckle between two fingers. A catheter was introduced into the meatus urinarius, which was seen just over the upper part of this red projection; a small teaspoonful of urine came away.

An exploring needle (Charrière's) was now thrust into this bulging mass, but nothing came. A trocar, one used habitually for hydrocele, was then introduced, and slowly a thick dark red liquid began to ooze from the end of the canula. After about four ounces had come slowly away, the instrument was removed, a large diaper was applied by the mother, and the patient left to walk some two squares to return home in the cars. She returned at the end of a week to report herself as perfectly well.

I have written to my grandfather, Dr. John L. Atlee, of Lancaster, asking him if, in his experience of sixty years, he has met with any such case as this one. I extract from his answer as follows:—

"Some years ago, a young girl, about 15 years of age, was brought to me, who never passed her menses, and suffered at each period. Upon examination I found, as you described, the pelvis full and the membrane tense. I made a small opening first to confirm the diagnosis; a fluid like molasses was discharged. I then made a crucial incision, laying open the ostium vaginæ freely, and nearly a quart of a similar fluid was discharged. After cleansing the parts I sent her home; and suppose it was all right, as I never saw her afterwards.

"Another very interesting case of imperforate hymen[1] occurred to me many years ago in the early part of my practice. I was sent for to a primipara, whose husband kept the gate at Witmer's Bridge. When I arrived in the evening she had been in pain all day. Examination *per vaginam* revealed a very strong membrane, occluding the vagina, of quite a fleshy character. I traced it all around and could find no entrance for the point of my finger. In the absence of pain, I could feel a tumour an inch higher up, that felt like the mouth of the uterus stretched over the head of the child. I tried to break the fleshy membrane, but it was impossible. I came home, got my instruments, and made a crucial incision through the membrane, assisted by an old lady who held the candle. As soon as I had done this, I felt the os tincæ and the membranes and head presenting, I ruptured them, and in a reasonable time delivered the patient. She had many children afterwards. The question arose, how could impregnation take place, according to the acknowledged law of impregnation? I could not pass even a probe through any opening into the vagina in this case after searching closely just behind the orifice of the urethra."

[1] This case, of course, is not reported as one of retention of the menses from imperforate hymen, but it is certainly worthy of record, and I cannot refrain from including it here.

These two cases appear to be worthy of record, and of being commented upon, from the fact that quite extensive research has shown that with the exception of Barnes's *Med. and Surg. Diseases of Women* (London, 1873), and of Emmet's *Gynæcology*, all our systematic treatises in the English language on Surgery and on the Diseases of Women, either altogether ignore this affection, or else very imperfectly appreciate and describe it. Again, as Morgagni puts it, *non numerandæ sed perpendendæ sunt observationes.* It is evident, moreover, that such cases as these are very rarely met with, for my father's experience is one of over thirty years, and that of my grandfather of over sixty, so that both together they represent the experience of a century of active practice. Nélaton (*Pathologie Chirurgicale*) speaks as if he had never encountered this state of things but once.

The anatomical changes brought about in the parts, in these cases of retention of the menses from imperforate hymen, are these. The blood coming down from the uterus is completely arrested in the vagina, which becomes distended, forming an enormous tumour on top of which the uterus is pushed upwards and a little to the right of the median line. The uterus, on account of the great resistance that it offers, does not become distended until very late; when this occurs the blood will be forced into the Fallopian tubes, distending them also.

In these cases, if let alone and the hymen does not give way, the uterus or Fallopian tubes must yield from over-distension or from gangrene. Instant death has followed rupture of the uterus (Courty, *Maladies de l'Utérus*), and fatal peritonitis, rupture of the Fallopian tubes.

The symptoms that accompany the filling up of the parts are these: The patient first complains of colic in the hypogastric region, with a sensation of weight and uneasiness; this lasts for five or six days, and then is absent for a month, until the recurrence of the monthly sickness, when these symptoms return with greater intensity. After this has continued for some time (depending upon the amount of blood exuded), the pains acquire the character of the bearing down pains of parturition. With these symptoms we have the gradual formation of a tumour in the hypogastric region, with tingling and numbness of the extremities from pressure on the sacro-lumbar nerves; there is also difficulty of defecation, with a tiresome tenesmus in the rectum; the bladder is pressed on, and we have not only vesical tenesmus, but dysuria or even retention of the urine. Then follow the sympathetic disturbances of the digestive functions, loss of appetite, and vomiting. The calm which the patient enjoyed in the intervals of the menstrual sickness becomes shorter, and the health is profoundly altered, so that her life is now only a series of sufferings, intermingled with periodic exacerbations.

When a young girl with such a history of symptoms, and with all the outward appearance of the age of puberty, presents herself, a thorough

physical examination of all the genital parts is absolutely necessary. In the vagina, a reddish or violet-coloured projecting tumour will be found, and if the tumour is very tense, the labia minora are effaced. On digital examination of the rectum, its anterior and posterior walls will be found pressed together by a tumour in front. In some cases, those of long standing, in the hypogastric region will be found a tumour, giving a dull flat sound on percussion. Notwithstanding the comparative ease in these cases of making a correct diagnosis, various mistakes have been made; the tumour in the vagina has been thought to be a fallen womb, or the bag of waters, and the hypogastric swelling has been mistaken for pregnancy and ascites (Courty). The prognosis will be the more favourable the earlier the case is seen; when the Fallopian tubes are much distended and tumours can be felt in their position, the prognosis is so unfavourable that some authors have advised that the case be left alone, as death will surely follow (Dupuytren, Boyer, and Cazeaux).

The treatment immediately indicated is the removal of the obstacle to the flow of the blood. As to when and how this is to be performed with the greatest safety to the patient, Bernutz and Goupil (*Clinique Médicale sur les Maladies des Femmes*) advise waiting till eight or ten days after the menstrual period, when the parts will be in the most quiescent state, and then to puncture the hymen with a hydrocele trocar, with a piece of gut attached, for the purpose of avoiding a too sudden emptying of the uterine cavity. When the uterus is emptied too quickly, the Fallopian tubes are apt to contract simultaneously; for this reason a catheter should not be used to insure the escape of the blood. If the blood stops, more punctures can be made; when the greater part of the retained blood has come away, a free incision is made in the obtruding membrane, and means are used to dilate and insure the final permeability of the canal.

Emmet relieved the four cases he has met with by dividing the hymen with a bistoury, and the washing out the vagina and uterus with warm water. A small glass vaginal plug was then introduced and removed twice a day in order to wash out the vagina.

Barnes mentions that death has followed from small as well as from larger incisions of the hymen, and advises that an opening be made sufficiently large to allow of free evacuation, and to prevent the entry of air a compress should be applied over the uterus, and sustained by moderate pressure with a bandage; if any decomposition should arise, the gentle injection of a weak solution of the permanganate of potash or carbolic acid will be desirable.

Courty advises that the operation be performed at the same time as Bernutz and Goupil, eight to ten days after the menstrual period. The hymen is made to bulge out by pressure on the hypogastrium, it should then be seized with a pair of forceps, and a circular piece cut out with a bistoury, or a pair of curved scissors. The pressure on the hypogastrium

must then be stopped, and a thorough examination made of the genital organs with the index finger, and afterwards a medium-sized gum-elastic sound, large enough to fill up the opening, is put in. In this way the blood is kept from spurting fast, and the uterus and vagina from returning to their former condition. The air reaches the uterine cavity with difficulty, and influences it in the least unfavourable manner.

Nélaton (*Pathologie Chirurgicale*) recommends incising the membrane with a bistoury, trocar, or a lithotome, and the introduction of a canula or a tent, to prevent the closing of the opening thus made.

ARTICLE XII.

DISTAL COMPRESSION APPLIED IN A CASE OF INGUINAL ANEURISM, WITH A SUCCESSFUL RESULT.

By THEODORE R. VARICK, M.D., Medical Director of, and Surgeon to, St. Francis Hospital, and Surgeon to Jersey City Charity Hospital, Jersey City, New Jersey.

C. T. L., æt. 45 years, a native of Germany, consulted me in April 1877, in reference to an aneurism involving the right popliteal artery of about the size of a small hen's egg. Being unwilling at the time to submit to the prescribed treatment, he sought other advice, and was subjected to a variety of treatment by various persons. After the lapse of one month, he returned, and during that period the aneurism had grown so as to fill completely the popliteal space. Genuflexion, compression by means of shot-bag and tourniquet were successively tried, but, owing to the irritability of the patient, who could not be persuaded to undergo the temporary inconvenience incident to the treatment, failed. On the 21st of May, 1877, I ligated the femoral artery, which resulted in a cure of the disease.

In May, 1880, he noticed a pulsating tumour in the left groin, extending from Poupart's ligament, to as near as could be ascertained about three inches above, thus involving the external iliac artery. The femoral was found to pulsate with preternatural force, and its lumen manifestly dilated. Immediately above Poupart's ligament the tumour expanded abruptly to the size of a billiard ball. The expansile pulsation and thrill indicated its aneurismal character. The patient suffered from primary syphilis twenty years ago, and since that time from osteocopic pains indicating constitutional contamination.

In view of the evidence (presumptive at least) of disease of the whole arterial system, the proper course of treatment was for a time a matter of some doubt. Considering the extent of the disease and the probable necessity of ligating the common iliac, with the chances of finding unsound arterial tunics, I determined to resort to distal compression applied to the artery as it passes over the horizontal ramus of the pubis. I accordingly, on June 27, 1880, applied Ricord's bubo compressor sufficiently tight to moderate, but not entirely obstruct the flow of blood through the artery beyond. Compression was continued forty-eight hours, when the integument becoming inflamed, the compressor was removed. The

pulsation in the mean time having become manifestly diminished, indicating that the process of deposition of laminated fibrin was taking place. The inflammation alluded to went on to the production of a slough the size of a fifty-cent piece, which was ultimately thrown off, leaving a healthy granulating surface which rapidly healed. The patient was confined to his bed sixty-two days. At the expiration of this period, the tumour had become firm, with a scarcely appreciable amount of pulsation, while in the artery beyond none was perceptible.

I saw nothing of the patient until March 15, 1881, when he called at my office. The most careful examination failed to discover the slightest pulsation. The sac had become solid and materially reduced in size. He stated to me that there had been no pulsation for a month prior to this visit. Before placing him in bed I directed a smart mercurial purge, which had the effect to thoroughly cleanse the alimentary canal. There was prescribed a diet consisting of rare beef and mutton, with a pint of milk per diem, and a wineglass of water with each meal. This allowance of water was continued for six days, which was as long as the patient could be persuaded to continue it. Absolute rest was enjoined, with opium at night sufficient to produce sleep. In addition potass. iodid., in doses of grs. xxx. ter in die was prescribed, and its administration continued up to the latter part of November, 1880. Although at the time he was allowed to get out of his bed, and attend to his business, the pulsation had not absolutely ceased, there was at no time an increase of it, and its subsidence was progressive.

The idea of applying compression to the artery beyond the sac originated with Vernet, a French military surgeon, at the close of the last century, and was tried in a single case which terminated unsuccessfully. There seems to have been no subsequent trials of the method, and, from the period alluded to, it received no countenance on the part of surgeons.

Gross in his "System of Surgery," vol. i. p. 730, remarks, "From the want of success attending the case, ill adapted as it was to test the principles of a new process, no one, it seems, felt afterwards disposed to make further trials of it, and it was accordingly forgotten, or remembered only as an ingenious suggestion."

In Holmes's "Surgery," vol. iii. p. 496, we find the following: "As to pressure on the distal side of the sac, it appears in some cases to be very useful as an auxiliary to complete compression of the artery leading to the aneurism; but as the essential measure for the cure of the disease, it it is not to be trusted. Still, trial may be made of this plan in aneurism at the root of the neck, where direct pressure might be dangerous, and where pressure between the heart and tumour would be impossible."

It is a source of gratification at this late day to rescue from oblivion a mode of treatment condemned at its inception on account of want of success in a single case.

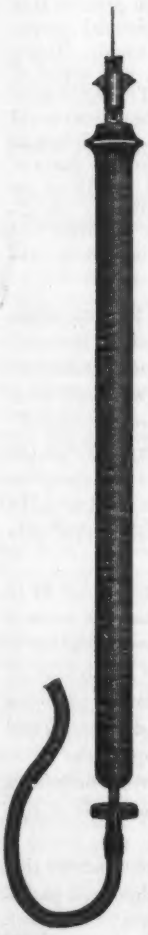
Although this is the sole recorded case of success, it demonstrates that success is possible, aided by treatment based upon an enlightened pathology, and a recognition of the method adopted by nature, viz., the deposition of laminated fibrin in effecting a cure.

ARTICLE XIII.

AN INSTRUMENT FOR THE REMOVAL OF SUPERFLUOUS HAIRS.

By LOUIS A. DUHRING, M.D., Professor of Skin Diseases in the Hospital of the University of Pennsylvania, Philadelphia.

A SUITABLE instrument for the removal of superfluous hairs by means of the galvanic current, according to the method now generally practised by dermatologists in this country, has, I have every reason to think, been a want. I am not familiar with any published account of such an instrument. It has been the practice, doubtless, for each dermatologist to devise for his own use the best contrivance his ingenuity might suggest. The object is of course plain—namely, the introduction of the current to the base of the hair by means of a needle-holder and needle. The several little instruments I have up to the present time used have been extremely simple in their construction, and while serving their purpose were not such as I felt disposed to recommend to inquiring friends. It was with the view of perfecting the instrument that I consulted with Mr. Otto Flemming, the well-known electrical-instrument maker of this city, with the result which I herewith offer to the profession. It meets the purpose for which it was designed, and is, I think, a decided improvement on any contrivance of the kind that I have seen.



It is of the shape of a thin lead-pencil or pen-holder, and is about four inches in length. The handle or stem is of hard rubber, through which passes a metallic rod, acting as a conductor for the transmission of the current. The needle is inserted into the needle-holder proper, which is slotted, the needle being clamped immovably by means of a screw-nut. On the other end of the stem there is an insulated inserting-pin attached to the cord leading to the battery. The instrument is of proper weight, convenient to handle, and altogether well adapted for this neat and most valuable little operation.

A word may be added concerning the needle, which should be of steel and as fine as possible. As stated in the account of the mode of performing the operation, in the second edition of my "Treatise on Diseases of the Skin," a No. 12 cambric sewing-needle ground down to the finest possible calibre will be found the most service-

able. Those I have been using were made (through the kindness of Dr. J. W. White) at the dental establishment of S. S. White, of this city, and have always proved satisfactory.

ARTICLE XIV.

OPERATION FOR THE RELIEF OF BURSAL SWELLING OF THE WRIST. By J. E. COPELAND, M.D., of Rectortown, Fauquier Co., Virginia.

MY object in this article is to invite attention to an operation for the relief of bursal swelling of the wrist, performed more than a third of a century ago by Mr. James Syme, which, perhaps, has not commanded the consideration which it merits, since it is not even alluded to in any of the works on surgery that I have examined.

The American Journal of the Medical Sciences for January, 1845, page 225, presents from the *London and Edinburgh Monthly Journal of Medical Science* for October, 1844, a report of the operation performed by Mr. Syme, in which he says: "There are few subjects of surgical practice that have occasioned more trouble and disappointment than morbid distension of the bursæ which accompany the flexor tendons of the forearm in their course under the annular ligament of the wrist towards the fingers." He refers to the usual treatment of this form of ganglion and its failure, and as the treatment of similar derangements in other parts of the body, is not attended with such negative results, the question, "What local peculiarity is concerned in causing the obstinacy of this particular case?" presents itself to Mr. Syme. He concludes "that the constriction caused by the annular ligament causes the effect in question, by preventing a portion of the bursal sac corresponding to the subjacent tendons from undergoing the healing process," and gives the following case in support of his conclusion:—

"Janet Preston, aged twenty, was admitted on the 13th of February, complaining of pain and weakness in her left hand. The wrist and palm of the hand were much swelled, but not discoloured, and pressure on the parts caused distinct fluctuation, with the jarring sensation that characterizes effusion into the bursal sheaths. She stated that pain had been first felt about two years before, and that for the last twelve months she had had hardly any use of the hand, in consequence of the swelling and weakness attending it.

"I made a free incision from the wrist into the palm of the hand, dividing the annular ligament. This gave vent to a quantity of glairy fluid, with many small flat cartilaginous-looking bodies, and exposed to view the flexor tendons, separated and surrounded by thickened bursal membrane. The cavity was filled with dry lint, supported by a bandage moderately compressing the hand and wrist. In the subsequent treatment care was taken to prevent protrusion of the tendons, by drawing the edges of the wound together, and applying a compress over the seat of the annular ligament. Not the slightest disagreeable symptom followed the operation, and three days after it the patient could sew, which she

had been prevented from doing for many months previously. In the course of a few weeks the wound healed, and the limb was in every respect perfectly sound."

I offer the following case of seventeen years' duration, in which I performed Mr. Syme's operation with a much better result than I had reason to anticipate, considering the long standing of the affection, and the extent and variety of treatment and attention which had been bestowed upon it.

CASE.—George Payne, a well-developed negro, æt. about 39, applied to me March 9, 1879, for "liniment" for the relief of pain in his wrist, forearm, and shoulder, caused by bursal swelling of the posterior portion of the wrist. He gives the following history: During the year 1861 he was engaged in making horseshoes and shoeing horses for the army. In the latter part of the same year he was compelled to abandon his occupation on account of severe pain over the trapezium near the base of the metacarpal bone of the thumb. The pain was increased by the use of the hand, and followed by weakness of the thumb. During the next six months the pain extended towards the ulnar side of the wrist, followed by weakness of the index and middle fingers, and swelling of the wrist, and by the close of the year 1862 the whole dorsum of the wrist was involved, rendering the hand almost useless. When he applied to me he could not support a pound weight on his hand nor close his fingers on an ordinary-sized broomstick, and could not approximate his thumb and index finger sufficiently to enable him to pick up a lead-pencil with them. The pain in his wrist, forearm, and shoulder was almost constant, with exacerbations at night and during stormy weather. The affected wrist measured 13¼ inches in circumference, the corresponding wrist of normal size measured 7⅞ inches. There were two firm and hard protuberances over the styloid processes of the radius and of the ulna. On manipulating the parts between these protuberances, a sensation as of hard, movable bodies, impacted in fluid, was imparted to the fingers. He had applied tinc. iodine, preparations containing ammonia, and many ointments and other popular remedies. He was for some time under the treatment of the U. S. army surgeons, and had been heroically treated by a number of practitioners, by incisions, punctures, blisters, etc., as the cicatrices testify, and all without benefit.

I proposed Mr. Syme's operation, to which his consent was readily given. Accordingly, the next day (March 10th), I made an incision between the tendons of the extensor communis digitorum and the extensor carpi ulnaris muscles, the most available portion of the wrist, and cut down to the annular ligament which I divided. Imbedded in the substance of the enlarged wrist, along the incision, were a number of fibrous or cartilaginous bodies of different sizes, ranging from that of a flaxseed to a small cherry-stone, and of irregular shapes, depending perhaps upon their position, consistency, and the amount of pressure they sustained during their formation. The wrist was dressed antiseptically, a compress was applied over the divided annular ligament, to prevent, as in Mr. Syme's case, portrusion of the tendons.

On his return, on the 14th, he could pick up a pin with his thumb and index finger, and use his hand in other ways such as he had not been able to do for seventeen years. The pain had abated; he slept at night without an anodyne. The wound was kept open and treated upon general principles, until the end of the sixth week after the operation; when the affected

wrist was reduced to 8¼ inches in circumference. It was allowed to heal. Three and one-half months after the operation, he "made a whole hand" in the harvest field, raking and binding a swath of wheat for three consecutive days; and during the two years that have elapsed he has engaged in manual labour as a farm hand, suffering with scarcely any pain or other inconvenience. After excessive or long-continued exertion of the wrist, he says "it feels like giving out."

Prof. Gross in his *System of Surgery*, vol. i. p. 633, 5th ed., says this affection (chronic enlargement of the bursæ) is "often very obstinate and troublesome, resisting not unfrequently the best directed efforts of the surgeon for their removal," and recommends "sorbefacient applications, as iodine and hydrochlorate of ammonia, blisters, mercurial inunctions, and systematic compression," and when these measures fail, "thorough excision," with the precaution to avoid injury to the synovial membrane of the articulations, but he does not mention division of the annular ligament as a remedy in the enlargements under consideration. We make special reference to Prof. Gross' treatment of this affection, because he is universally regarded as high surgical authority.

A remarkable feature in my case is that the integrity of the articulations and muscles was so slightly impaired by the morbid condition surrounding them for so many years, as to regain much of their former strength and usefulness, and that too in a short time after being relieved from their bondage. The fact that the location of the trouble in the two cases was in different parts of the wrist—one on the anterior and the other on the posterior portion, and that both were relieved by dividing the annular ligament subjacent to the affected part, strengthens the theory advanced by Mr. Syme. That the result of this operation in these two cases far exceeds the prognosis by the ordinary treatment is evident, and should, we think, recommend it to the favourable attention of the profession, and, in the language of Mr. Syme, "the complete success of which encourages me to hope that the method pursued will be found to afford an effectual remedy for a complaint which has hitherto proved so troublesome."

ARTICLE XV.

AMPUTATION AT THE SHOULDER-JOINT. By L. McLANE TIFFANY, M.D., of Baltimore, Professor of Surgery in the University of Maryland.

WHILE amputation of the arm at the shoulder-joint is a very successful operation, indeed, probably the most successful of major amputations, yet a fatal case occurring under my care, from secondary hemorrhage, has caused me to think that possibly, certain dangers being recognized, the mortality may be still further decreased.

What I shall say has special reference to cases of ex-articulation at the scapulo-humeral joint when necessitated, not only by bone injury, but accompanied by extensive lesion of soft parts,—such wounds, in fact, as are apt to be followed by sloughing.

There seems to be no end to the list of methods of procedure which at one time or another have been called into requisition to effect the desired result, Velpeau saying "that whoever had operated once considered it necessary to propose a new method."

Le Dran passed a needle deeply beneath the artery and secured it over a compress. Then he made a transverse incision through the deltoid just below the acromion, effected the disarticulation and made a long axillary flap. The artery was then tied properly. La Faye made a large rectangular flap containing the deltoid, raised it, exposing the artery, which he tied, and divided the axillary tissues transversely; thus exactly reversing Le Dran's method. Dahl and Portal are credited with similar methods, replacing only the rectangular flap by a V-shaped one, apex down. Garengeot's method differed from that of Le Dran, inasmuch as both flaps were quadrilateral, and of equal length; he passed a provisional ligature beneath the main vessel. Dupuytren, Onsenort, and Cline are credited with methods differing but little from the preceding, the flaps being either cut by transfixion, or from without inwards. Bell made a circular incision joined by two lateral ones, thus forming rectangular flaps. Lisfranc improved Dupuytren's methods by entering the knife in the coraco-acromial space, opening the joint at once. Laroche, Sharp, Desault, Larrey, Dupuytren, Delpech, Scoutetten, Hello, Graefe, Sanson, Cornuau, Guthrie, Alanson, Verneuil, Velpeau, Spence, Pozet, Bertrandi, have all suggested modifications of existing methods according as circumstances seemed to warrant, until it would appear as if the subject were well exhausted, especially as Velpeau (Mott's translation, vol. ii. p. 561) has tried the "ovalar process reversed," by which we are forced to imagine that he made his flaps attached to the amputated member and not to the trunk.

It is well recognized that in the treatment of disease where many remedies are mentioned, there is no specific, and this idea holds good of shoulder-joint amputations, so that it is fair to suppose that no method can justly be worthy the title of best.

The articulation is so well covered in front, behind, and above, that sufficient flap can always be obtained, while the vascular anastomoses are so free from the axilla and elsewhere, that sloughing occurs rarely, except as the result of direct violence, or, of course, hospital gangrene. Lastly, it must be remembered that the axilla is open below, and that it is a difficult matter to prevent good drainage, a fortunate circumstance having much to do with the recorded small mortality.

Attempting to see what operative measures have obtained the greatest success, I turned to the "Medical and Surgical History of the War,"

finding at p. 620 Surg. vol. 2d Pt. a record of 368 cases of primary amputation at the shoulder which recovered. The operation is described in 179 cases as follows:—

	Times.
Oval flap	26
Lisfranc	12
Larrey	10
Transfixion	16
Lateral flap	10
Antero-posterior flap	24
Double flap	23
Flap	44
External flap	4
Dupuytren	3
Circular	6
Malgaigne	1

In this it is probable that oval and Larrey refer to one and the same method, that Lisfranc and transfixion are each used to express the same manner of amputating; but lateral flap, antero-posterior flap, double flap, flap, leave very confused impressions in the mind of the reader as to the course of the incisions. Turning to page 632 of the same volume, there are recorded 117 fatal primary shoulder-joint amputations; in these cases the operation is described 45 times, the terms used being very similar to those in the first series.

Wishing to define the incisions described in the Medical and Surgical History, I consulted the usual text-books and discovered at a glance the cause of confusion, namely, that surgical authorities describe the same operation very differently; thus, Larrey's Amputation, Gross (vol. ii. p. 1075) says is formed of two oval flaps, one in front and the other behind (antero-posterior). Holmes (vol. iii. p. 78) describes Larrey's amputation as consisting of lateral flaps. A flap formed of the deltoid is called external or posterior by different writers, etc. etc. This lack of definition renders comparison of various methods impossible until a uniform system of nomenclature be adopted. In the absence of definite tabulated experience, and recognizing that many ways are advised by competent surgeons, it is tolerably safe to conclude that each case should be judged on its own merits, and flaps fashioned accordingly.

The fatal case to which I have referred is the following:—

CASE I.—J. B., aged 35 years, was run over by a train of loaded railway cars. The right humerus was crushed extensively, the head of the bone being comminuted; the skin covering the inner and anterior aspect of the arm was almost all torn away; the chest was much bruised.

I amputated at shoulder-joint by tying the axillary artery in the wound, fashioning a flap out of skin from behind and over the deltoid, and finally picking the fragments of humerus from the walls of the chest, some pieces being thrust deeply into the pectoral muscle. Sloughing of the bruised tissue took place, and the patient died of hemorrhage from the axillary artery on third day.

Post-mortem examination revealed a ragged opening in the artery nearly one inch above the ligature. Evidently the vessel had been injured and gave way when suppuration was established.

Now it is possible that although the shape of the flaps may be a matter of small importance, yet there are other circumstances incident to amputation, a due regard to which may be of advantage to the patient, and one of prime interest is the treatment of the main artery, and it is to this that I wish to call attention in this paper; incidentally also to the nerves.

Turning to the "Medical and Surgical History," etc., I find, Surg. vol. part 2, page 635, as follows: "The causes of fatal results in this series of one hundred and seventeen amputations are not particularly specified in more than one-half the instances. Consecutive hemorrhage is assigned as the cause of fatality in twelve cases, including nine in which large trunks were tied." About one case in five.

On page 642 is a record of seventy-five fatal cases of intermediary amputations (from 3d to 30th day); the cause of death is given in fifty-nine instances, and of these, thirteen succumbed to hemorrhage; one in four and a half. So large a proportion in the above tables of fatal cases is due to hemorrhage as to justify any suggestion for operating with a view to obtaining more successful results. Unfortunately the history of the cases as published does not enable one to appreciate the reason why hemorrhage took place, but a certain number, cases 20, 26, 77, 89 (table 44, page 632), clearly show gunshot injury high up the arm, such as might well be followed by sloughing with the usual accidents.

In civil practice amputation at the shoulder other than for tumours is rarely required, except for railway or machinery crushes, and it is under just such circumstances that the influence of violence is felt far beyond the region immediately involved, and therefore the tendency to suppurate is felt beyond the site of visible injury. Not only will bones be fissured, as after gunshot wounds, but the muscles show rupture of fibre and points of extravasated blood throughout their length; the conduct of vessels subject to violent extension is too well known to require more than passing mention. Amputation for crushing injury, unless effected at some distance from the seat of violence, is always followed by much suppuration, and where the injured member is very muscular, suppuration is apt to be correspondingly profuse; again, in consequence of unequal strain being put upon different muscles they will be injured in different degrees and slough unequally.

When crushing injury occurs in the neighbourhood of the shoulder, so near indeed that the flaps formed in amputation are composed of strained if not bruised tissue, suppuration and sloughing result, which is very apt to extend along the intermuscular spaces, in which spaces, of course, are found vessels and nerves; it follows necessarily then that divided vessels

should be secured some distance from the face of the flap, the ligated point being thereby further removed from the site of suppuration.

Again, the humerus being comminuted, the arm is greatly shortened by muscular retraction, the artery retracts, and on amputating, the vessel is divided at a lower level than would occur were the bone not broken, or in other words at a point which has already been subjected to the same violence that broke the bone, for it is to be remembered that the vessel usually escapes destruction at the same time that the bone is crushed. This renders the artery apt to give way when profuse suppuration of the bruised flaps occurs, since the vitality of the arterial tunics is still further impaired by the neighbouring inflammatory process. This is the explanation to which I was led when considering the circumstances attending the fatal issue in Case I., and in subsequent operations to avoid a similar untoward result, I have always ligated the main vessel at a distance from the face of the wound through a new incision if necessary, or else have dissected the vessel from the flap by drawing it strongly down, and tying it quite a distance from the point of section. It is scarcely necessary to say that the flaps are to be left well open that the products of inflammation may freely escape.

The method of procedure is simple; the arm being removed, the axillary artery is grasped with toothed forceps, drawn out and stripped of connective tissue for certainly three inches—the fingers suffice to do this—a ligature is then applied and the vessel divided distal to the string. Should a large branch, *i. e.*, subscapular, appear, it requires a separate ligature. Lest the suppuration following the severe injuries under consideration should involve the large trunks of the brachial plexus and give rise to neuralgia on cicatrization, it is my habit to draw strongly upon the nerves and cut them with scissors quite a distance from the face of the flaps, so far with a happy result.

The following cases illustrate the method suggested:—

CASE II.—W. B., æt. 22 years, had his right arm caught in machinery belting and dragged between cogwheels. I saw the patient four hours after the accident. The humerus was crushed into many fragments, the comminution extending to the head of the bone; the soft parts were pulpified, especially along the inner aspect of the arm. Amputation at the shoulder was effected by raising a deltoid flap of bruised tissue from without inwards, exarticulating and cutting a short inner flap from within outwards. The artery was secured provisionally, and then a ligature by means of an aneurism needle passed around the vessel above the bruised tissues. The nerves were drawn down and divided as high as possible. Much sloughing and suppuration ensued, followed by recovery. The stump was not painful when seen four years later, nor had it been.

CASE III.—W. E., aged 25, while intoxicated, was run over by laden railway cars. Left arm crushed to the shoulder. Amputation at shoulder-joint decided upon. In order to gain sufficient flap, skin was taken from in front of, and over, the acromion, cut with a scalpel from without in-

wards; a second flap below containing vessels and nerves was cut, after disarticulating, from within outwards. The artery was tied in the manner already indicated. The nerves were drawn upon and then cut as deeply in the wound as possible. Recovery ensued without notable circumstance. A painless scar marks the site of operation nine years after loss of arm.

CASE IV.—H. B., aged 25 years, was run over by railway cars. He evidently fell with the right arm resting on, not across, the rail, for the hand, forearm, and arm, as high as the surgical neck of the humerus were torn and crushed to a pulp. The deltoid was bruised and discoloured when seen one hour after injury. A deltoid flap was raised by transfixion, and after exarticulating a short lower flap cut from within outwards; both flaps were of bruised tissue. The axillary artery was strongly drawn down and cleared of tissue well beyond the surface of the flap, tied, and allowed to retract. The nerves were dissected out and divided. The wound was left almost entirely open; suppuration of bruised tissue and abscess in pectoral muscle took place, but the wound healed by granulation, and a painless stump resulted.

ARTICLE XVI.

THE COMPARATIVE ACTION OF HYDROBROMATE OF HOMATROPINE AND OF SULPHATE OF ATROPIA UPON THE IRIS AND CILIARY MUSCLE. By CHAS. A. OLIVER, M.D., of Philadelphia.

THESE series of experiments[1] were conducted on ten young emmetropic[2] eyes, care being taken to obtain persons of intelligence, and place them under the same conditions in reference to light and time of day.

The accompanying tables, based upon those of Donders, with the exception that here the actual loss of accommodation is expressed, instead of the remaining power, show the action of a single instillation of the one-fortieth and the one-twentieth of a grain each of hydrobromate of homatropine and of sulphate of atropia into an emmetropic eye, after intervals of one month.

[1] The author is engaged in a series of similar experiments with Datura stramonium, Hyoscyamus niger, Duboisia myoporoides, etc., which he intends combining with this paper, for future publication. It was his intention to make use of all the drugs upon the same eye, at the proposed intervals of one month, but through unavoidable circumstances he has been obliged to find a second emmetropic eye, thus making a slight break in the paper.

[2] Several previously corrected for H+Ah, in all of which the correcting glass and its distance from the eye were calculated for.

In every case, as soon as accommodation for Sn. 1¼ became impossible, a convex glass was placed one-half inch before the eye—this in all instances being taken into account.

TABLE I.—*Comparative actions of the one-fortieth of a grain each.*

EXPLANATION.—The numbers under the line A A designate

TABLE I.—*Comparative actions of the one-fortieth of a grain each.*

EXPLANATION.—The numbers under the line *A A* designate the number of minutes after instillation. The numbers from *B* to *A*, ciliary power, expressed in dioptrics. The numbers from *A* to *E* the horizontal diameter of the pupil, in millimetres. The dotted line, the action of atropia. The ruled line, the action of homatropine. The heavy dots, the times of examination.

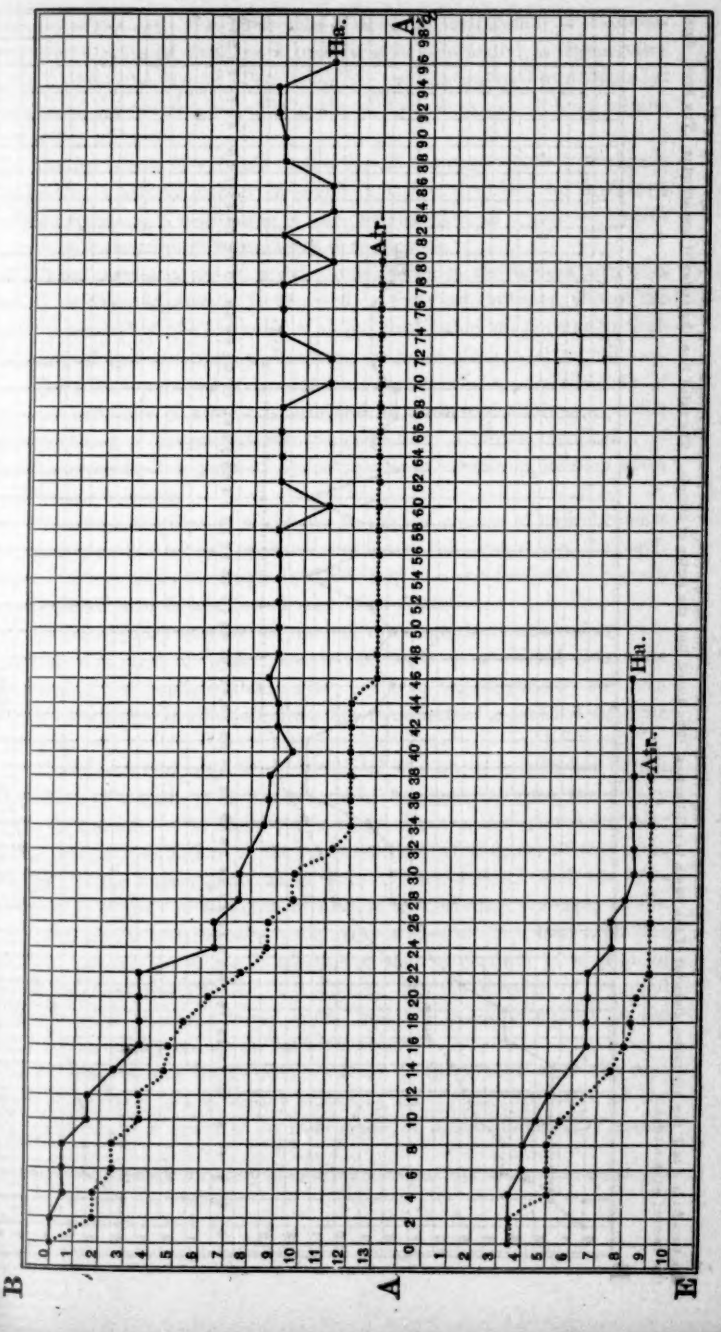
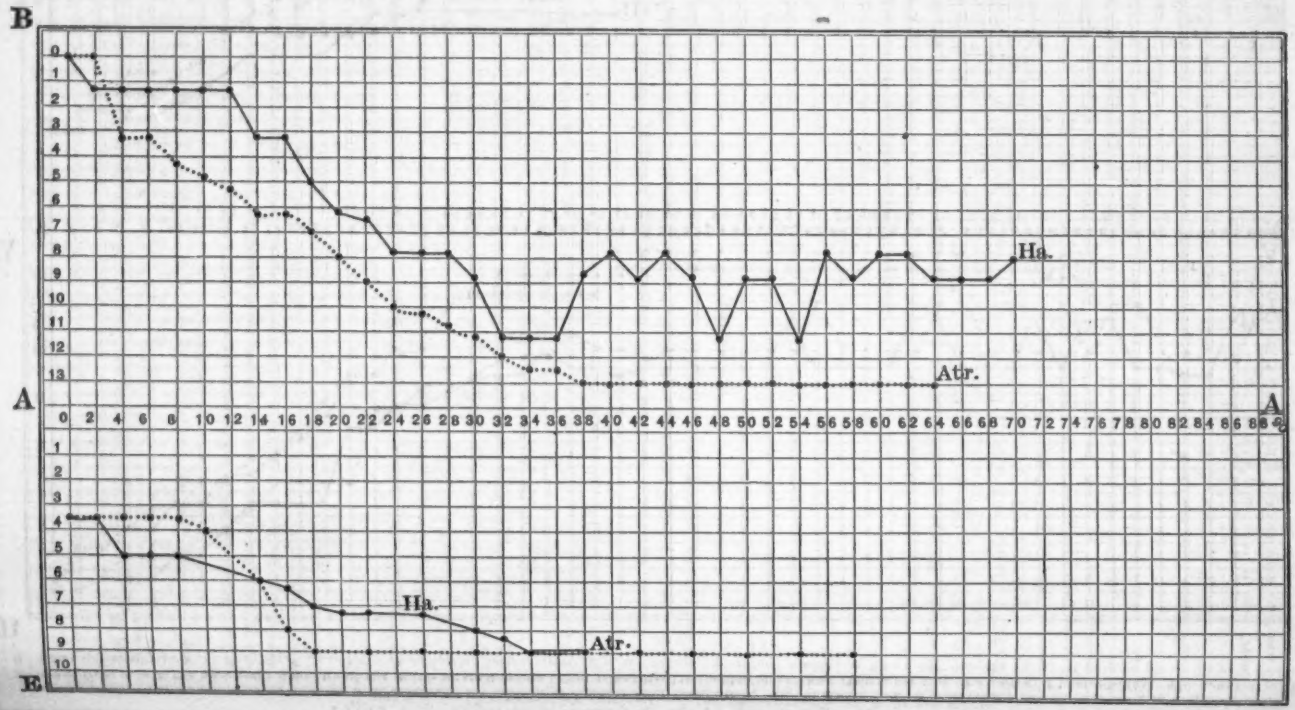


TABLE II.—*Comparative actions of the one-twentieth of a grain each.*

EXPLANATION.—The numbers under the line *A A*, designate the number of minutes after instillation. The numbers from *B* to *A*, ciliary power, expressed in dioptrics. The numbers from *A* to *E* the horizontal diameter of the pupil, in millimetres. The dotted line, the action of atropia. The ruled line, the action of homatropine. The heavy dots, the times of examination.



Observations.—1. The mydriasis of a single instillation of the one-fortieth of a grain of sulphate of atropia is consummated in twenty-two minutes, whilst the utmost dilatation of the pupil occasioned by a single instillation of the one-fortieth of a grain of hydrobromate of homatropine takes thirty minutes.

2. The mydriasis of a single instillation of the one-twentieth of a grain of sulphate of atropia occurs in eighteen minutes, whilst the mydriasis produced by a single instillation of the one-twentieth of a grain of hydrobromate of homatropine takes thirty-four minutes.

3. The ciliary paralysis of a single instillation of the one-fortieth of a grain of sulphate of atropia is attained in forty-six minutes, whilst the utmost intensity[1] of the action of a single instillation of the one-fortieth of a grain of hydrobromate of homatropine takes place in sixty minutes.

4. The ciliary paralysis of a single instillation of the one-twentieth of a grain of sulphate of atropia is attained in thirty-eight minutes, whilst the utmost loss of accommodation occasioned by a single instillation of the one-twentieth of a grain of hydrobromate of homatropine takes place in thirty-two minutes.

5. The single instillation of the one-fortieth of a grain of hydrobromate of homatropine has not in any instance produced full dilatation of the pupil, whilst, in every case, the single instillation of the one-fortieth of a grain of sulphate of atropia has caused maximum dilatation.

6. In the majority of cases examined, the single instillation of the one-twentieth of a grain of hydrobromate of homatropine caused maximum dilatation[2] of the pupil, whilst in every instance full dilatation was produced by the single instillation of the one-twentieth of a grain of sulphate of atropia.

7. The utmost intensity of the action of the single instillation of the one-fortieth of a grain of hydrobromate of homatropine upon the ciliary muscle, is maintained for about two to four minutes, the same being true for the single instillation of the one-twentieth of a grain of the same drug, whilst the ciliary paralysis of both the one-fortieth and the one-twentieth of a grain of sulphate of atropia is stationary for many hours.

8. By accurate observations made every second or third hour after the utmost action of the single instillation of the one-fortieth of a grain of hydrobromate of homatropine, it was found that the diameter of the pupil became normal in about thirty hours, and full re-establishment of the power of the ciliary muscle in fourteen hours.

9. By observations made every second or third hour after the mydriasis and utmost loss of ciliary action by the single instillation of the one-twentieth of a grain of hydrobromate of homatropine were estab-

[1] I have not deemed it necessary to enter into the details of the actual loss, as reference to the table will explain.

[2] Vide case noted in table B.

lished, it was found that the pupil became normal in about fifty hours, and full accommodative power returned in twenty-four hours.

10. In the mydriasis and ciliary paralysis of the single instillation of both the one-fortieth and the one-twentieth of a grain of sulphate of atropia, the pupillary diameters became normal, and full accommodation returned in from ten to fourteen days.

During the course of the experiments with the homatropine, it was noticed—

1. After the time of its utmost action, the near point was exceedingly difficult to determine on account of circles of diffusion being suddenly thrown around the test object, due to clonic spasm of the ciliary muscle, as shown by the table.

2. If after the lapse of twenty-four hours, a second instillation of the one-twentieth of a grain was made, almost full radiary contraction of the iris took place in from ten to twelve minutes, whilst the utmost action of the drug on the ciliary muscle took but ten to eighteen minutes' time,[1] but in no instance was there total loss of accommodation.

3. If at the time of the utmost action of the single instillation of the one-twentieth of a grain of the homatropine upon the ciliary muscle the one-sixtieth of a grain of the same drug was instilled, *complete* paralysis of the muscle was established in fifty-four minutes, which remained stationary more than thirty minutes.[2]

4. In nearly every case, conjunctival irritation and injection, with a sense of astringency and smarting.[3]

5. No observable appearance of constitutional disturbance, except some dryness of fauces and a peculiar bitter taste.[4]

Conclusions.—1. A single instillation of either the one-fortieth or the one-twentieth of a grain of hydrobromate of homatropine is insufficient to paralyze accommodation, and hence is of no value in properly estimating refractive error.

2. Complete paralysis of the ciliary muscle can be obtained by a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of atropia.

3. A single instillation of the one-twentieth of a grain of hydrobromate of homatropine is capable of producing full dilatation of the pupil;[5] whilst

[1] This result not invariable, two cases requiring the same length of time as on previous day.

[2] The exact length of time not accurately known, as examination not continued beyond one-half hour after full paralysis was established; the thirty minutes being considered sufficient time to correct any existing refractive error.

[3] Thinking the preparation might not be neutral, it was submitted to the litmus test, revealing marked acidity.

[4] Here it might be proper to state that many of the unpleasant constitutional effects seen in the use of mydriatics, are dependent upon the physician; the drugs often being used without a thought in reference to strength, quantity and repetition.

[5] I give this statement with some reserve. In the majority of cases it was undoubtedly so, as in the case noted.

it is impossible to produce maximum dilatation by a single instillation of the one-fortieth of a grain of the same drug.

4. Maximum dilatation of the pupil is produced by a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of atropia.

5. The utmost action of a single instillation of the one-fortieth of a grain of hydrobromate of homatropine upon the ciliary muscle, is attained later and lost sooner than the full paralysis occasioned by a single instillation of an equivalent amount of sulphate of atropia.

6. The utmost action of a single instillation of the one-twentieth of a grain of hydrobromate of homatropine upon the ciliary muscle is attained sooner and more quickly lost than the full paralysis occasioned by a single instillation of an equivalent amount of sulphate of atropia.

7. The mydriasis of a single instillation of either the one-fortieth or the one-twentieth of a grain of hydrobromate of homatropine is not so quickly produced, and is of shorter duration than that of a single instillation of either the one-fortieth or the one-twentieth of a grain of sulphate of atropia.

8. *Complete* ciliary paralysis can be obtained by a single instillation of the one-sixtieth of a grain of hydrobromate of homatropine at the time of the utmost action of a single instillation of the one-twentieth of a grain of hydrobromate of homatropine, thus allowing ametropia to be accurately determined.

9. A single instillation of either the one-fortieth or the one-twentieth of a grain of hydrobromate of homatropine, by reason of its transient effect on the iris and ciliary muscle, is valuable when we desire accurate ophthalmoscopic examinations in cases dependent upon their use.

10. The conjunctival irritation of hydrobromate of homatropine may be avoided by the use of an absolutely neutral salt.

11. Single instillations of the amounts given, of either of the drugs, are perfectly free from injurious constitutional effect.

I here desire to express my thanks to Dr. William F. Norris for many valuable suggestions, and to Drs. George T. Lewis, C. W. Fox, and G. H. Halberstadt for assistance given.

1507 Locust Street.

ARTICLE XVII.

STAB WOUND OF THE NECK AND DIVISION OF THE RIGHT RECURRENT LARYNGEAL NERVE, FOLLOWED IMMEDIATELY BY ABSOLUTE APHONIA.

By GEORGE M. LEFFERTS, M.D., Clinical Professor of Laryngoscopy and Diseases of the Throat, College of Physicians and Surgeons, New York, etc.

THE great rarity of the following case will, I believe, render the history one of general interest.

On January 5th, 1881, the patient, a strong, healthy German woman, æt. 47, while lying upon her left side, in bed, was approached suddenly by her drunken husband and stabbed in the neck with a long narrow-bladed pair of shears; turning and endeavouring to rise, she received a second blow upon the ramus of the lower jaw, causing a long lacerated wound. Attempting to scream aloud for help, she found herself voiceless. On April 5th I was consulted on account of the aphonia, which had persisted since the injury.

Examination.—A long, irregular cicatrix on the border of the lower jaw, right side, a short distance from its angle; a second small one, evidently the result of a punctured wound, at the inner border of the sterno-cleido-mastoid muscle, at the level of the lower border of the cricoid cartilage on the same side. Patient completely aphonic, speaking only in a whisper, and suffering from slight dyspnœa, especially on exertion. The laryngoscope showed absolute paralysis of all of the muscles of the right vocal cord, it being fixed in the cadaveric position, *e. g.*, midway between the extremes of adduction and abduction, and motionless on attempted phonation or inspiration. The left vocal cord moves freely, and compensates for the defective action of its fellow by passing the median line on adduction, its arytenoid cartilage passing in front of that of the paralyzed cord, and thus fairly approximating the edges of the cords. Laryngeal mucous membrane normal.

Remarks.—The condition is of course an incurable one; the only possible error in diagnosis lies in default of a laryngoscopic inspection, in the supposition that the case was one of functional paralysis due to sudden emotion and terror. This theory is at once disproven by the direct examination of the condition of the vocal cords. That a clumsy instrument, roughly used, should have escaped wounding the vital vessels which it must have closely passed in its inward course, and severed alone a nerve the size of the recurrent lying in a protected situation, is hardly comprehensible. The fact, however, stands.

ARTICLE XVIII.

ON SOME OF THE CONDITIONS AFFECTING THE ORIGIN AND COURSE OF PULMONARY PHTHISIS.

By BEVERLEY ROBINSON, M.D., Lecturer upon Clinical Medicine at the Bellevue Hospital Medical College, New York.

THE conditions affecting the origin and course of pulmonary phthisis are so numerous that it would be impossible, in the limits of a journal article, to properly consider even the majority of them. In the following pages I desire to call attention to three of them, to which my individual experience has directed my attention, viz.:—

I. Inflammation of the respiratory organs as they affect the origin and course of pulmonary phthisis.

II. Syphilis in its relations to the origin and course of pulmonary phthisis.

III. Contagion and inoculation.

These subjects are especially selected on account of their great importance and actual interest.

I. *Inflammation of the respiratory organs as they affect the origin and course of pulmonary phthisis.*

In this connection I would first direct attention to the influence of (*a*) laryngitis and bronchitis. I know full well, and notwithstanding the ancient views of Portal and Borsieri, who contended that pulmonary phthisis was frequently due to an ordinary cold, that this view has since that time been warmly debated. Louis, in his researches upon pulmonary phthisis, where the numerical method is so exhaustively adopted, endeavours to show by the thorough analysis of eighty cases that bronchitis has no direct effect in producing pulmonary phthisis. Since Louis' day students and practitioners have become familiar with Niemeyer's conclusions, who recognizes in bronchitis a direct and very efficient condition of the origin and progress of pulmonary phthisis. Amongst them he states that it extends its march to the pulmonary parenchyma, and that an acute broncho-pneumonia thus produced is too apt to lead to cheesy nodules which rapidly soften and form cavities occasioning after this manner an advanced stage of pneumonic phthisis. These conclusions are strongly combated by Flint in his late remarkable treatise on "Pulmonary Phthisis." If I refer to my own notes, I find that I am forcibly obliged to adopt the view that bronchitis, but more particularly laryngo-bronchitis, is an efficient and direct condition of the origin and course of pulmonary phthisis. In my experience, and upon close questioning, I find many patients who date the origin of their pulmonary affection to taking "cold." This cold has frequently been accompanied with some hoarseness and cough, which instead of disappearing rapidly and completely, remained and became aggravated and more distressing as time elapsed. In a fair proportion of cases I have been unable to trace the persistence of the hoarseness and cough, either to hereditary influences, or bad hygienic conditions. True it is, however, that an occasional and efficient condition of recurrence of an attack of laryngitis or bronchitis in its primary intensity was taking a fresh "cold," and this succession of acute attacks was obviously most detrimental to pulmonary integrity. Whenever the inflammatory change has seated itself within the larynx, it has almost invariably augmented the frequency and intensity of cough, and in a small degree increased the quantity of sputa. I have likewise remarked that such cases are more depressing to the general condition than those in which the inflammation is limited to the bronchial mucous membrane. Besides the increased cough, dysphagia, which accompanied the laryngitis at times, was seemingly the reason why little nutriment was taken, and thus helped along rapid diminution of flesh and strength. No doubt in numerous instances the laryngitis followed upon the bronchitis, or was at most an unimportant dependent of it, but there were numerous examples in which it appeared

to me that but for the laryngitis the bronchitis would have had a much better chance of cure. Following directly upon the laryngo-bronchitis, I have clinically observed the advent of dulness at the apices with harsh breathing and more numerous râles at this region. These physical signs when combined with grave general symptoms left me but one probable belief, viz., that the lung had become consolidated in its upper portion and that this consolidation was most probably occasioned in the manner referred to.

(*b*) The inflammatory condition of the pulmonary parenchyma, such as we encounter in lobar pneumonia, has very rarely appeared to me to affect the origin and course of pulmonary phthisis. This is particularly true in almost all instances where the pneumonia attacked an individual previously healthy. Usually when he had recovered from this acute disease, cough and expectoration entirely disappeared; previous strength and flesh were regained, and shortly the patient was seemingly as well as before. At times, and when a whole lobe or lung became consolidated by reason of acute inflammation in a patient presumably phthisical already, it has obviously been an efficient condition of the more rapid advance of the phthisical disease of the lungs. True it is, however, that broncho-pneumonia, whilst it is more readily and frequently produced by the presence of miliary tubercle than the lobar form, is also more likely to lead to its manifestation and hasten its march. Nothing indeed is more insidious at times than the development of small nodules of consolidation of this kind in the lungs. If they are situated centrally, a slight rise of temperature may be almost the only symptom indicative of their existence. As they extend towards the surface of the lungs, or fresh nodules form more superficially, physical signs may clearly prove their existence. In very many examples of course both the local and general phenomena present, are sufficiently characteristic to enable us to affirm their development. Now, then, these nodules, instead of resolving and disappearing completely, will oftentimes become still more solid and cheesy, and around their outer limits too frequently do we recognize at the autopsy numerous miliary tubercles which evidently were under their dependence and proceeded directly from them by auto-inoculation carried on through the vascular supply of the affected region. It may be affirmed that it required a predisposing constitutional state to permit such effects to be produced. Too frequently, I am confident, no such hypothesis is warranted; and the local infiltration of broncho-pneumonia once established marches inevitably towards phthisical development in the pulmonary structure. In this opinion I hold to what the pathology of to-day certainly teaches, viz., that whenever catarrhal products become impacted in the smaller bronchi the pulmonary lobules are apt to become degenerated, general infiltration of pulmonary fibrous tissue takes place, and broncho-pneumonia, leading often to pulmonary phthisis, is developed. It is not essential,

moreover, to believe with Watson that "dormant predisposition is awakened into actual disease and latent tubercles are accelerated" by intercurrent inflammation of pulmonary tissue.

(*c*) The influence of pleurisy upon the origin and course of pulmonary phthisis has been variously determined by different authors. While some see in the existence of a previous or present pleuritic inflammation a very direct and powerful condition of the development of pulmonary phthisis, as many other writers contend that the pleurisy is usually produced by the miliary tubercles already present, sometimes in its layers, sometimes immediately beneath them. Certain it is, as Louis has affirmed, and as almost all autopsies show, the most frequent pathological accompaniment of pulmonary phthisis is pleuritic adhesions. These adhesions may be partial or general. They may consist, indeed, only of a few bands, or fibres, connecting the two pleural surfaces together. Still they almost invariably are found in a greater or less extent of the pulmonary surface. The warmest advocate of their causative influence in producing pulmonary phthisis in the last few years has been Dr. J. R. Leaming, of New York, and he has made a new division of pulmonary phthisis based mainly on this conviction. To such a belief I can but oppose the fact that miliary tubercles are not infrequently seen within or upon the surface of the pleura, and, notwithstanding their presence, no pleuritic inflammation has been established. If we take into account, however, the frequency of pleuritic adhesions localized at the apices of the lungs, and the fact that these adhesions have obviously been the cause at times of pain and certain stethoscopic signs, when pulmonary respiration at their level was still vesicular and uncommonly pure—that following occasionally upon these signs, and after the lapse of several months, the evidences of adhesions remaining, cough becomes more frequent and harassing, flesh and strength are notably diminished, and roughened breathing with stationary small moist râles are discovered, all indicating the presence of pulmonary phthisis—how can we fail to recognize that pleuritis is a modifying agent of great importance as regards the origin of pulmonary phthisis? Whenever pulmonary phthisis is already developed, and pleuritic adhesions are added to it, there is little reason to doubt that they hasten very materially the onward and downward march of the former. When not yet produced, but imminently threatened, they effect this development, doubtless, in a very analogous way to what we recognize when other serous membranes become inflamed, or thickened, as, for example, when peritonitis is a primary condition of degenerative changes in the intestines, or pericarditis precedes a somewhat similar alteration in the connective tissue and muscular fibre of the cardiac walls. By their presence, chronic congestion and hyperplasia of the pulmonary tissue are obviously occasioned, being directly due to their contraction and to the pressure effects thus

produced. In these changes further degeneration is liable to occur, and crude tubercle often originates.

II. *Syphilis in its relations to the origin and course of pulmonary phthisis.*

As is well known, the belief that pulmonary phthisis may be directly caused by syphilis is no new one. As far back as Morgagni such an opinion was sustained, and so late as the days of Laennec and Andral the notion was a prevalent one that phthisis was a not infrequent result of syphilitic infection. At this period it was held that the other pulmonary diseases which to-day we recognize as being distinctly syphilitic in their causation were intercurrent affections of quite different origin.

How does the question stand in our day? Is there or is there not a pulmonary phthisis which is caused directly by syphilis? Now, if by phthisis we mean tuberculosis, I answer in the negative; but if by phthisis we mean merely a wasting febrile disease, ulcerative in character, affecting particularly the lung-structures, why then I answer that there is such an affection. If the former view be held—namely, that all phthisis is tubercular—then the influence of syphilis in its etiology is but that of a predisposing condition. Syphilis, like most general diseases, impairs the nutrition of the economy, reduces the strength of the individual below the normal, and, finally, when the dyscrasia is firmly seated, becomes doubtless an important factor in the development of lung-disease, phthisical and even tubercular in nature. As regards the latter tenet, we know already and without question that, in the tertiary period of syphilis, interstitial pneumonia and gummy deposits are not uncommonly found in the lung-tissue. Depaul made the discovery in 1851. Since that time, Virchow, Weber, Lancereaux, Lebert, Moxon, Fournier, Randohr, Gamberini, and others have confirmed and extended our knowledge of these and other specific pathological conditions. Oftentimes, at the autopsies of syphilitic subjects, cavities have been found in different portions of the lungs, surrounded by walls of fibrous tissue, and presenting to the naked eye and to microscopic examination characters not dissimilar to those found in cadavers of persons who have succumbed to tubercular disease. And yet there are some distinguishing features, it is said, from a pathological standpoint: The nodules indicative of syphilitic changes are situated particularly in the lower lobes. They are less numerous and of larger size than the cheesy nodules of tubercular phthisis. Their colour and consistency are also signs by which they may be at times differentiated. The gummata are white or yellow, never transparent like miliary tubercle. They are of more uniform structure, and, if they break down, their destruction, on account of the nature of their capsule, is never so complete as that of a tubercular deposit. (Fournier, quoted by Bumstead, Venereal Diseases, 4th ed., p. 629.)

Whilst the above characters exist at times after death, and will then

enable us to distinguish syphilitic pulmonary disease from that which is of tubercular nature, they are not always present. Prof. Gamberini (*American Journal of the Medical Sciences*, April, 1881) reports two cases in which the syphilitic lesion was situated in the upper lobe of a lung, and also shows that the course of syphilitic disease may be both slow and apyretic. Moreover, he states that even after death tubercle cannot always be distinguished from gumma. How is it prior to death? Here the situation is at times relatively easy; often very difficult. Of course, if with the history of an infecting sore we find manifold cutaneous and other lesions, obviously of syphilitic nature, any pulmonary symptoms observed would be apt to be attributed, and properly, to the same diathesis. In such instances, the direct ocular examination of the fauces and pharynx will often reveal signs of great diagnostic value, as, for example, the red symmetrical bands which mark the pillars (Mackenzie), the dry, shiny appearance of the pharynx, and the red and enlarged papillæ on the back of the tongue (Seiler). To this examination may profitably be added an expert one by means of the laryngoscope. Only very lately, Dr. Carl Seiler has published two cases in which this instrument was of much practical value in the diagnosis and treatment (vide *Medical and Surgical Reporter*, April 16, 1881). It would appear from the reading of Dr. Seiler's paper that a like experience has been already communicated to the profession by Dr. John Schnitzler, of Vienna ("Die Lungen Syphilis," 1880). But—supposing the signs of an ulcerative pulmonary affection manifest themselves and progress rapidly, and that neither the history nor examination of the patient reveals the existence of syphilis—how can we determine whether the intra-pulmonary condition is or is not occasioned by syphilis? Frequently, neither rational symptoms nor physical signs will permit us to make the distinction. Almost everything points to the existence of tubercular deposit which has reached the stage of cavities. Even the family history may give increased certainty to this conviction. There may be emaciation, loss of strength, continued fever, profuse purulent expectoration, obstinate cough, and all the accompanying stethoscopic signs of pulmonary phthisis at an advanced period. Treatment alone by mercury and iodide of potash is the touch-stone of this condition when nothing else is, and I have already seen more than one patient, who, in the state described, has been immensely benefited by these remedies, though cod-liver oil and the hypophosphites had been given without appreciable good effects.

In view of these cases what shall we say? Will the mere location of a cavity prove its nature? Evidently not, for I have myself seen the apices affected with destructive lesions, which were only ameliorated by specific medication. And the other pathological conditions already mentioned are not by any means constant at the autopsy. On the contrary, there are patients in whom the advanced phthisical disease is not separa-

ble by our most thorough methods of investigation from those on the one hand which are due to syphilis, or on the other, occasioned directly by tubercle. The best we can affirm at the present time is, that there is a pulmonary phthisical affection which appears occasionally in the tertiary stage of syphilis, and which offers by all recognizable signs before death, and at times by those revealed at the autopsy, such close resemblances with advanced tubercular consumption that we are compelled to acknowledge our inability to affirm its precise nature. This position being accepted, it should be recognized that whenever a phthisical predisposition exists already in a patient, and when this patient unfortunately becomes inoculated with syphilis, he has contracted an exceptional morbid imminence to the origin and rapid progress of pulmonary phthisis. Further these dyscrasiæ may march side by side, and post-mortem revelations may indicate merely, as Wagner has shown, that one constitutional disease is at most but modified by the other.

III. *Contagion and Inoculation.*

These two subjects touch one another so closely to-day by the experimental researches of Villemin (1865–66), Marcet, Sanderson, Clark, Fox, and later by Virchow, Schottelius, and Cohnheim, that I naturally wish to consider them together. The medical world in our time has been much divided in regard to the question of direct transmission of pulmonary phthisis. Some there are who can never recognize its existence, always inferring that hereditary predisposition, or bad hygienic conditions are mainly instrumental in its origin and progress. Alongside of this conclusion stand unfortunately numerous undeniable instances in which pulmonary consumption is traceable without question, to breathing an infected atmosphere from a consumptive patient during many weeks or months. Husbands, in previous strong and vigorous health, after caring for phthisical wives, sleeping in the same bed and breathing the same air, have undeniably become consumptives. Wives more frequently, after being placed in similar position as regards affected husbands, have after a time developed tubercular disease, when no explanation other than infection through contact could be satisfactorily offered. These and many analogous examples would suffice to show that in a certain number of well ascertained conditions, the liability to contracting pulmonary phthisis through contact is great. It becomes, therefore, the duty of practitioners to urge the importance of preventive measures. These should be—

(*a*) Separation as far as possible of healthy from affected individuals.

(*b*) Thorough ventilation of all rooms where a husband, wife, sister, or nurse is forcibly obliged to remain many hours of the twenty-four in close attendance upon a phthisical subject.

Is pulmonary phthisis transmissible by food? Chauveau's, Colin's, and other experimental researches prove conclusively :—

1st. That tubercular disease is frequent among cattle, and especially amongst cows and oxen.

2d. That the contact of a diseased animal with a healthy one for a long period, is almost sure to communicate phthisical disease to the other before in a healthy condition. From numerous examples, in which the milk of tubercular cows had been, during many months, the chief source of nutrition of certain children who became pale, emaciated, and finally developed tubercular disease, it is fair to assume that in milk of this origin we have a fruitful source of pulmonary phthisis. Boards of health, properly organized, are, therefore, called upon imperatively to take cognizance of these facts, and to see to it that the milch cows of our cities and towns are unaffected with the "pearl" disease, which is nothing more nor less than a disease similar to pulmonary phthisis in man. Whether the consumption of meat from these diseased animals is capable of producing pulmonary phthisis in man is still debatable, the cooking of such meat appearing to act as an antidote to contagion. The question of the contagion of pulmonary phthisis rests to a great degree upon the possibility of its inoculability. The first experiments of Villemin, Professor at Val de Grace, in 1865, appeared to settle this for a time in the affirmative. Later, Fox, Clark, and Sanderson showed that tubercular disease might be produced by substances not at all specific in nature. Within a year this matter has again been taken up by Cohnheim, and we find ourselves forcibly obliged to admit that, from the inoculation of tubercular or purulent material taken from a phthisical patient, pulmonary phthisis in animals may invariably be developed. It would seem, too, as if the medical world were obliged once more to hold the view first promulgated by Laennec, that pneumonic phthisis and tubercular phthisis are one and the same disease. The investigations of Tappeiner have also indubitably shown that the mere breathing of atomized watery solutions of the sputa of phthisical animals will convey infection to healthy animals. It is, therefore, fairly presumable, in conclusion, from manifold experiments, and more particularly from the latest and most convincing of all, those of Cohnheim, of Leipzig, that pulmonary phthisis in man may be conveyed by—

1st. *The ingesta*, as by the flesh or milk from tubercular cows.

2d. *Inhalation*, as by the particles of sputa carried in the atmosphere directly from phthisical patients.

3d. *Direct inoculation*, as by an abraded surface of a part of the integument through which tubercular matter can be absorbed.

I sum up this brief and imperfect *exposé* of a most important subject by a citation taken from Drake: "A disbelief in the contagion of consumption is highly favourable to the spread of that disease (if it can be really propagated in that mode), inasmuch as in private practice and both in civil and military hospitals no measures of prevention are employed." (Quoted by Clapp: "Is Consumption Contagious?" etc., Boston, 1881.)

ARTICLE XIX.

THE SORGHUM VULGARE, OR BROOM-CORN SEED, IN CYSTITIS.

By ALEX. Y. P. GARNETT, M.D., Emeritus Professor of Clinical Medicine in the National Medical College, Washington, D. C.

THE recent articles which have appeared in different medical journals directing attention to the therapeutic virtues of the stigmata of maize as a remedy in cystitis, prompt me to furnish for publication my experience in the treatment of that disease, with the seed of the Sorghum vulgare, especially as this remedy, so far as I can ascertain, has never been introduced to the profession, and holds no place as such in any of the systems of practice or in any of the journal articles which I have seen.

Whilst there seems to have been some knowledge of the fact among certain practitioners of medicine in this section of the country, that the seeds of the common broom-corn possessed to some extent curative virtues in renal and cystic affections, this knowledge has never been utilized by experimental tests of such qualities. On the contrary, I find upon investigation that this plant has evidently been confounded with the ancient remedy for dropsy, the Sarothamnus scoparius or broom tops, and has probably never been used at all. By reference to the last edition of the *National Dispensatory*, we find that as far back as the seventeenth century the broom tops have been used as a remedy in dropsy and regarded as especially efficacious in those forms of anasarca produced by cardiac disease. At a later period several German and English writers have called attention to its virtues in the various forms of dropsical effusion and in certain inflammations of the genito-urinary organs. No special claims, however, seem to have been made for it as a remedy in cystitis until very recently.

As far back as 1860, I was induced to employ the broom-corn seed in cases of cystitis both chronic and acute, at the suggestion of those who had seen it used with great reputed benefit among the plantation negroes of Maryland and Virginia. The mode of administration practised by them was in the form of a decoction of the seed made by boiling two ounces (℥ij) of the seed in a quart of water down to a pint, and requiring the patient to take the whole of this pint during the twenty-four hours. It was alleged that a perfect cure could be effected in the space of ten days usually, by the use of this remedy alone. My experience, however, failed to sustain these extraordinary claims for its specific virtues, but satisfied me that it possessed undoubted merits in both the acute and chronic forms of simple cystitis. This opinion I verified by the results of numerous cases treated with the broom corn at that time. Owing in part to the exciting events and disorganizing influences at work in Washington immediately preceding the war, I failed to preserve any record of these cases. Within the past year I have had repeated opportunities of testing the value of this

remedy in cystitis, and whilst it may not be necessary to give in detail a record of each individual case which has come under my observation during that period, I will here refer to two or three of the most recent, including those at present under treatment.

CASE I.—Mr. T., a gentleman forty-eight years of age, consulted me in January last, affected with a well-marked case of chronic cystitis from which he informed me he had been suffering at intervals for the last six years, resulting, he thinks, from an antecedent attack of gonorrhœa, or the treatment used for its cure. He has had stricture dating contemporaneously with the cystitis, for which he has been treated at long intervals by the introduction of various sized bougies. For the last year the stricture has given him very little trouble except at intervals dependent upon indiscretion in the use of wine or exposure to damp and wet weather. The painful and difficult micturition, however, had continued without much abatement, together with more or less tenderness on pressure over the bladder. An examination of the urine by Dr. G. N. Acker furnished the following results: sp. gr. 1021; reaction acid; numerous leucocytes; some blood-corpuscles; epithelium from bladder and urethra.

This gentleman has spent the greater part of his life in travel both in this country and in Europe, and has been under the care—for short periods—of several of the most skilful members of the medical profession. He possesses a nervous temperament, is irritable, self-willed, and unwilling to subordinate his own judgment to that of his medical attendant, refuses positively to submit to any instrumental examination of the urethra or bladder, and relies greatly upon his capacity to treat his own case. At the time he came under my observation, he was using simply an infusion of dog-grass which had been ordered for him by a physician whom he had consulted in New York.

After much persuasion, I prevailed upon him to try a decoction of the broom-corn seed prepared according to the formula given above. Of this he took during the day one pint, using at night a suppository containing ext. belladonnæ gr. $\frac{1}{3}$, Morphiæ sulph. gr. $\frac{1}{4}$. This treatment he pursued by special agreement between us, for five consecutive days and nights, when he was compelled to acknowledge himself greatly relieved, and consented without further solicitation on my part to continue the use of the decoction as long as he experienced any benefit therefrom, or as I thought it advisable for him to do so. At the expiration of three weeks he had so far improved as to micturate without pain, go out on long walks, with improved appetite and capacity to sleep, and expressed himself as feeling better than he had done for many months. Whilst he had been kept upon the maximum quantity of the decoction, the suppositories after the first few days had only been used twice a week, being held in reserve for future use as the urgency of the symptoms might demand. I occasionally saw this gentleman for two months; learned that he was still using the broom seed tea in smaller quantities, being fully impressed with its beneficial effects in his case, and confidently predicting his ultimate recovery by its use.

CASE II.—The second case is that of a Mrs. S., a woman about 28 years of age, in good condition and healthy appearance. Has suffered with cystitis for the last three years, attended with aggravations more or less severe, resulting from accidental causes. I could obtain but a meagre history of this case, owing to the fact that she had not, until the last

twelve months, given her case much attention, and had not up to that time put herself under the care of any physician. At the time she came under my treatment, she was suffering with great irritability of the bladder and intolerance of urine, requiring constant and painful efforts to expel it. Appetite and sleep impaired. Supra-pubic and intra-vaginal pressure against the bladder occasioned much pain. Chemical and microscopical examination of the urine showed the following: Dark yellow colour; sp. gr. 1027; reaction very acid; heavy sediment consisting of urates, mucus, muco-pus, and epithelium from bladder and vagina.

An exploration of the bladder with a steel sound satisfied me that it contained no calculi, and that this was a simple case of cystitis of long standing. Without going into details, it is sufficient to state that the treatment consisted in daily washing out the bladder with tepid water; the application of hot water bags to the pubic region; an anodyne suppository every other night for two weeks, and the free use of the decoction of broom-corn seed. She has now been under treatment for three months, steadily improving, all other remedies having been suspended for the past four weeks except the decoction; the urgent symptoms of frequent micturition and pain having almost disappeared. It is proper for me to add as corroborative testimony in favour of the broom-corn in this case, that on more than one occasion, when the decoction was suspended for several days in consequence of her inability to procure the seed, the unpleasant symptoms became aggravated. She is still under observation, and faithfully and hopefully adhering to the treatment.

CASE III. is that of a married lady, 36 years of age; has never borne children; possesses a nervous, excitable temperament; has been suffering with cystitis for eighteen months; symptoms at no time very urgent; more or less incontinence of urine. Microscopical examination confirmed the diagnosis.

Came under my care during the latter part of January last. Seems to suffer more from nervous irritability, manifesting itself in what she calls the fidgets and insomnia. Says she feels constantly like jumping out of the window; evidently some hysterical complication. Examination of the pelvic viscera discloses no uterine disease or displacement, but positive evidence of cystitis. Before consulting me she had been under the treatment of several physicians, including a homœopath, and had used most of the diuretics generally employed in such cases—particularly the infusion of uva ursi—deriving in some instances temporary benefit only. Irrigation of the bladder with tepid water was ordered to be used every other day. The decoction of the broom-corn seed, a pint daily, containing potass. bromid. ʒj, and an anodyne suppository at night, rest in bed, and abstinence from all stimulating drinks and diet, were enjoined. Under this treatment she immediately began to improve, and after a few days the bromide was discontinued, and the suppositories introduced every other night. She continued to practise the irrigations for two months, at the same time using the decoction as a drink, and observing the general hygienic directions given at the commencement of her case. Since the first of April I have occasionally seen this lady, who informed me a few days since that she has discontinued all treatment for the past few weeks, and considers herself cured.

CASE IV. is that of a gentleman, 50 years of age, suffering with all the symptoms of cystitis, associated with a stricture at the membranous portion of the urethra, the consequence he thinks of a former gonorrhœa.

Symptoms are those usually met with, and described in Case I. Has been affected for a year or more, but subjected to no medical treatment until he consulted me about three weeks since. Microscopical examination gave about the same results as in the other cases—mucus, muco-pus, and bladder epithelium in large quantities.

The symptoms in this man's case have not been of such a severe character as would compel him to take to his bed, or confine himself to his house, until I was sent for. For four days he was kept in bed with hot applications over the bladder, an anodyne suppository at night, and a pint of the decoction of broom-corn seed ordered to be taken daily. Owing, however, to the nausea produced by the decoction, I have been compelled to use it in smaller quantities, as I have been able as yet to procure no better preparation of the seed. For the last two weeks he has been permitted to go out to attend to business, having manifestly improved in every particular. He recognizes and appreciates his improved condition, and feels fully satisfied that his relief is due to the effects of the medicine. This case is still under observation and treatment. Interference with the stricture has been postponed until further general and local improvement.

Some objection may be urged against the particular form adopted for the administration of the remedy in the above cases. It will very possibly occur to most practitioners that any substance given in such large doses would be a serious obstacle to its use, as nausea would in most cases be likely to ensue. Such, however, has not been my experience with its use in that form. I have preferred this primitive mode of employing this remedy, because in preparing the decoction the seeds alone are employed, and as these are supposed to contain a larger proportion of the active principles upon which its therapeutic virtues depend than any other portion of the plant, we may naturally expect to obtain more positive results. It is not to be denied, however, that a fluid extract prepared from the seeds would be a much more popular, and, perhaps, an equally efficacious mode of administration.

I shall offer no theory regarding the physiological action of this remedy. Not having, as yet, been able to procure the necessary analysis to determine its proximate principles, I am not prepared to say in what particular constituent element resides its therapeutic virtues. It may simply be due to the large amount of mucilage contained in the kernel or seed proper, to some combination of the phosphorus found in the epidermis or rind of the seed, or belonging, as it does, to the same family with the sugar cane, it may possess in different combination, some of the principles of saccharine matter, which, associated with the above, might as a whole constitute its medicinal power. Whilst it manifestly relieved the disease, I observed no decided augmentation in the quantity of urine expelled.

ARTICLE XX.

CASE OF SEVERE INJURY OF THE BRAIN, WITH RECOVERY. By WILLIAM WOOD, M.D., of East Windsor Hill, Connecticut.

THURSDAY, May 29, 1880, I was summoned early in the morning to act as juror in a coroner's inquest on a man run over by the cars. On arriving at the depot where the body was brought, I found a well-dressed gentleman lying on the platform with his head cut open from the inner canthus of the left eye to the occiput. The brain was exposed, and a furrow some three inches in length was cut through the anterior portion of it. The left eye was turned up so that the pupil was not visible. On the opposite side of the head was a scalp wound three and one half inches in length. The conductor of the train informed me that the man was lying *beside* the track, and that his head was struck by the pilot of the engine. On looking at the cut in the brain I could discover slight pulsation, and there was some effort at respiration, but quite irregular. I immediately sent to my office for my surgical instruments, and after shaving the scalp, I introduced my fingers inside of his skull and removed some small spicula of bone, hair, and detached portions of the brain. I placed the eye in its normal position, and adjusted the scalp, taking some ten or twelve stitches, leaving a small opening at the inner canthus. I then applied a bandage over and around his head, drawing the bones into as close proximity as possible. During the whole operation he remained perfectly quiet and unconscious. He was removed into a neighbouring house, and I left, not expecting to see him living on my return. About 1 o'clock a messenger came for me, saying that he was vomiting blood. I found him with a tolerably full, intermitting pulse—ordered cold applications to the head, and counter-irritation over the region of the stomach. No visitors were allowed, and all noise about the premises was strictly forbidden.

Thursday night, passed water involuntarily; the vomiting of blood continued through Thursday, Friday, and Saturday, at intervals.

Friday and Saturday was very restless, requiring the constant care of two watchers to keep him on the bed.

June 1. Was more quiet.

2*d*. Partially conscious; removed stitches about the forehead and eyes; found union by first intention.

4*th*. Was rational, removed the remaining stitches, found perfect union the whole length, except at the angle of the eye, which was left open for drainage in case he should survive; measured the cicatrix, found it eight and one-half inches in length; the opening in the skull was the same as in the scalp.

5*th*. The tenth day after the accident, the discharge ceased, followed by the closing of the aperture; sat up one hour.

8*th*. Was dressed and walked out of doors.

11*th*. Rode out.

12*th*. The seventeenth day after the accident, rode to his boarding-house, some three miles distant.

21*st*. Resumed his work in the mill; twenty-sixth day since the injury.

The following facts I elicited from him: His name was Robert C. Chapman, a native of Glasgow, Scotland; thirty-two years old; was a machinist in a paper-mill in South Windsor. The mill had been running night and day for some time, and he had been in it six weeks prior to

this time, eighteen hours a day. The night previous to this accident he left the mill at 10½ o'clock P. M., and walked up the railroad track with two comrades to the hotel, at East Windsor Hill, and called for supper. After remaining for a time, they left for the mill; C. started back on the railroad track, as it was nearer, but his companions preferred to go by the highway. Overcome by sleep, he sat down near the track, which was the last he remembers prior to the accident.

The health of this young man has been good since his recovery; no trouble about his head; mind perfectly clear. He sees objects out of his injured eye, above or on a level with his eye, perfectly well, but has not the power to look down while holding his head erect. To test his vision, I blindfolded his uninjured eye, and gave him a letter which he read accurately and without hesitation.

There is evidently bony union over the posterior half of the injury. The interior portion over the frontal bone looks equally well, but upon pressure the bones appear to be separated about one-fourth of an inch.

As there was nothing unusual in the treatment of this case, I have omitted details. Cold applications were constantly applied to the head for the first week. I report this simply as one of the remarkable and exceptional cases of rapid and perfect recovery from an injury which, to all human calculations, must be fatal.

The blood vomited on the first, second, and third days after the accident no doubt came from his head, as his body was uninjured. The position in which I first found him makes the case plain. He was lying on his back with his head slightly elevated and mouth open.

ARTICLE XXI.

BENZOIC ACID IN THE ALBUMINURIA OF PREGNANCY AND SCARLATINA.

By W. SCOTT HILL, M.D., of Augusta, Maine.

THE presence of albumen in the urine of pregnant women and in urine after scarlatina, is always considered a dangerous symptom when occurring as a pathological condition. The pathology of such conditions is too well known to require mention. The property of benzoic acid to cause its rapid disappearance is not mentioned in any text-book on materia medica with which I am acquainted. The following cases in which it seemed to have that effect occurred in my practice:—

CASE I.—A lady, about thirty years of age, applied for treatment for anasarca. She was in the sixth month of her pregnancy. Had miscarried twice. There is anasarca of the whole surface. The face, hands, and feet very much bloated. Does not notice any difference in her size in the morning. Is usually in delicate health; is always anæmic. In both of her pregnancies before this there was the same anasarcous condition as in this. The anasarca has existed some six weeks. She now finds it difficult to walk. The abdomen is much enlarged, giving her the appearance of being in the ninth month of pregnancy. The abdomen evidently contains an unnatural quantity of liquid for her term. Some nausea

and dull feeling in her head. Urine scanty, sp. gr. 1030; tested with nitric acid and by boiling and allowed to settle, it contained one-half albumen. Acid. benz. gr. ij with sod. borat. gr. iij, was prescribed to be taken every four hours. A few days afterwards another examination of the urine was made as before, and only a small quantity of albumen was found. The same medicine was continued; at the expiration of six days from commencing to take the medicine another test for albumen was made, but not a trace found. The anasarca decreased, but did not disappear. It may be proper to state that the patient miscarried a month later. The miscarriage appeared to be caused by dropsy of the amnion.

CASE II.—Was that of a woman in the sixth month of pregnancy. No notes were made of this case, but the conditions and treatment were similar to the first with the same result. I did not have an opportunity of testing the urine subsequently in either case, and do not know whether the albumen reappeared.

CASE III.—A girl twelve years of age applied, April 26, 1879, for treatment for anasarca. She stated that early in the winter she had what a physician called scarlatina, but was not much sick, and had not been in good health since that time. First noticed the bloating of the hands and feet a few weeks after the disappearance of the rash. This had continued to increase until the present time. She had taken a medicine containing iron, but without benefit. Her urine was examined with the microscope, and casts were found; tested by heat and with nitric acid it deposited five-sixths albumen. Passes less than the usual quantity. Her stomach is irritable and rejects what is not palatable. The anasarca is very marked, her face being bloated so that she is hardly recognizable. Acid. benz. gr. one-tenth, with potass. bitart. gr. one-half, was prescribed to be taken every 2 hours. Three days after the urine was again tested, and about half the quantity of albumen deposited. She was now given one-tenth grain doses of the acid, and the urine again tested at the expiration of four days, and found to be free from albumen. There was a slight decrease of the anasarca. The patient continued to fail, and died from pulmonary œdema ten days after commencing the treatment.

CASE IV.—A boy six years of age had a mild scarlatina, for which he received some treatment by a physician. Two weeks after the subsidence of the rash his urine began to be scanty, and œdema of his face and extremities was noticed. When called to see him there was a moderate anasarca, more of the face than any other part. Some swelling of the cervical glands. He is thirsty at night; tongue coated on edges, red in the middle; urine scanty, sp. gr. 1020; no casts; deposits a small quantity of albumen on being tested with heat and acid. Acid. benzoic. in small and frequently repeated doses was prescribed. The albumen disappeared as in the other cases, and the boy made a good recovery. No other medicine was given.

In the first three cases there is no reason to suppose the albumen would have ceased to be secreted had they not been treated. The case of the little girl, which was undoubtedly a fatal form of Bright's disease, would seem to show that benzoic acid has the effect of preventing albumen passing into the urine. The little boy would perhaps have recovered without any treatment. The smaller doses of benzoic acid seemed to be as efficacious as the large ones.

REVIEWS.

ART. XXII.—*A Treatise on Bright's Disease and Diabetes, with especial reference to Pathology and Therapeutics.* By JAMES TYSON, A.M., M.D., Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, etc. *Including a Section on Retinitis in Bright's Disease.* By WILLIAM F. NORRIS, A.M., M.D., Clinical Professor of Ophthalmology in the University of Pennsylvania. 8vo. pp. 312. Philadelphia: Lindsay and Blakiston, 1881.

IN his preface the author says, "that, for more than fifteen years, his thoughts, his studies, and his practical work have all been in the direction suggested by these subjects, and that during that time material has passed under his observation which ought at least, if properly used, to have resulted in an experience which should be useful to others." Dr. Tyson has presented his subjects so clearly and concisely, and has selected his material with such sound judgment, that his work cannot fail to be useful to practitioners and students. His aim evidently has been to give in compact form the essential facts, rather than to furnish an exhaustive treatise burdened with discussion of disputed points. The work is provided with two coloured plates, and with thirty-six wood-cuts, which are devoted for the most part to the structure of the normal kidney and to the appearances of casts.

The first chapter contains a concise and excellent description of the *structure of the normal kidney.* The results of the important researches of Heidenhain, Schachowa, and Langhans are given. Klein's divisions of the uriniferous tubule are adopted. If the recent observations of Ribbert are confirmed, it will be necessary to modify the statement as to the existence of nuclei in the capillary walls of the glomeruli. The first chapter also includes some suggestions as to the methods of preparing the kidney for microscopical study, and a brief consideration of the theories regarding the process of secretion of the urine. In respect of the latter the view accepted is that of Bowman as elucidated by the experiments of Heidenhain.

The second chapter is devoted to the *methods of testing for albumen*, and to a consideration of the *sources and of the mechanism of production of albuminuria.* As was to be expected from the author's experience, his directions for detecting albumen in the urine are eminently simple and practical. He justly condemns the careless, but common, habit of designating by percentages the amount of albumen estimated, in the usual way, by observing the proportion between the albuminous precipitate and the bulk of urine tested. While speaking of pus in the urine as a source of albuminuria, the author calls attention to certain cases of vesical disease where with an insignificant quantity of pus there is an altogether disproportionate amount of albumen, although no evidences of renal disease exist. The least satisfactory part of this chapter is that which is taken up with the consideration of the mechanism of production of albuminuria. The author is evidently not cognizant of the experiments of Nussbaum, and

of Posner, when he states that the view which holds that albumen transudes through the capillaries of the glomerulus, is based only on theoretical grounds and not on demonstration. The theory adopted that the chief agency in the transudation of albumen in the kidney is increased blood-pressure in the capillaries has lost much of its basis by the experiments and critical analyses of Runeberg, Heidenhain, Cohnheim, Litten, and others, to whom the author does not refer in this connection. Alterations in the capillary walls are admitted as a cause of albuminuria "only in the more acute inflammatory conditions of the kidney."

In the third chapter the varieties, the nature, and the significance of *casts of the uriniferous tubules*, are ably discussed. Pale hyaline casts are considered to be produced by the coagulation of a fibrinous or albuminous exudation from the blood into the tubes. This view, which is by far the most probable one, has received welcome confirmation by the recent experiments of Ribbert, who has, moreover, demonstrated their albuminous nature in opposition to the conclusions of Axel Key and Rovida. Waxy casts, however, Dr. Tyson thinks, are probably produced by fusion and hyaline transformation of desquamated epithelium. He was able to confirm the observations of Bartels, and of Rindfleisch, that these casts exceptionally give the iodine reaction characterizing the amyloid change. He says that he has never found true casts in urine from healthy kidneys, although he is unwilling to deny the possibility of their occurrence under these circumstances. He has repeatedly had opportunity to confirm the fact that casts may remain in the urine for some time after albuminuria has disappeared.

In chapter fourth, after mentioning some of the different *classifications of Bright's disease*, the author gives his own classification, which is as follows: *acute parenchymatous nephritis, chronic parenchymatous nephritis, lardaceous disease, chronic interstitial nephritis, and cyanotic induration.* This is essentially the classification adopted by Bartels, whose authority is followed in the ensuing chapters perhaps more than that of any other writer. In the present state of uncertainty concerning what renal changes shall be included under the name Bright's disease, concerning the pathological anatomy of recognized forms of the disease, and concerning the groups of symptoms which characterize different varieties of the disease, it is easy enough to find fault with this as well as with any other classification ever suggested. The classification adopted by Dr. Tyson is a convenient and useful one, and in its main features is perhaps more generally accepted at present than any other. The propriety of including chronic passive congestion of the kidney under the heading of Bright's disease, is very doubtful. Cyanotic induration of the kidneys is not usually accompanied by important structural changes. We cannot forbear offering certain criticisms concerning the popular classification of Bright's disease adopted by Dr. Tyson. In the first place the whole doctrine of parenchymatous inflammation upon which it is based is not in harmony with the best views as to the nature of the inflammatory process. The swollen and clouded condition of cells designated as parenchymatous inflammation is also, and with more propriety, called parenchymatous degeneration, albuminous or granular degeneration, etc. While it may attend inflammation, it is also met with under circumstances where the inflammatory nature of the change is not to be thought of. We believe also that the most careful investigators are gradually reaching the conclusion that in the majority of cases of so-called parenchymatous nephritis,

whether acute or chronic, alterations in the glomeruli and in the interstitial tissue are present which it is wholly gratuitous to assert are unessential or merely secondary to changes in the epithelial cells. So marked is this tendency of recent investigations that Greenfield, in his *Résumé of the Present Knowledge of Renal Pathology* in 1879, regards as the only essentially parenchymatous form of Bright's disease, certain cases of non-scarlatinal acute nephritis which he admits are as yet imperfectly investigated and may hereafter be shown to be associated with other than purely parenchymatous changes. That a simple parenchymatous degeneration may occur in the kidney as well as in other organs cannot be denied, but there seems to be little ground, either from a clinical or from an anatomical point of view, for calling this change Bright's disease. With what propriety can we bring under the head of acute parenchymatous nephritis, those cases of scarlatinal nephritis in which there are marked changes in the glomeruli, and in the interstitial tissue, sometimes with and sometimes without parenchymatous degeneration of the epithelium of the tubes? What place in this scheme of classification shall we assign to Wagner's acute lymphomatous nephritis, or to Ribbert's glomerulo-nephritis with interstitial nephritis, forms of acute Bright's disease which undoubtedly exist?

Each of the forms of Bright's disease included in the above classification is considered in a separate chapter. This part of the book also includes a chapter on *suppurative interstitial nephritis*, and one on *retinitis in Bright's disease*, the latter by Dr. Norris.

For both *acute* and *chronic parenchymatous nephritis*, Dr. Tyson adopts the view so long and strenuously urged by George Johnson, that the primary and essential change is cloudy swelling of the epithelium of the convoluted tubes. Interstitial changes, if found at all, are secondary to the changes in the epithelium, and are not usually present in the early stages of the disease. "They consist in a hypernucleated overgrowth resulting from the proliferation of the connective-tissue corpuscles always present, or from the fixation of wandered-out colourless blood-cells, and are doubtless due to the long-continued hyperæmia." We are glad to see a full account, based upon Langhans's researches, of the alterations in the glomerulus and its capsule. The appearances interpreted by Langhans as referable to proliferation of the capillary nuclei are in reality due, according to Ribbert's recent studies, to the accumulation of white blood corpuscles and of an albuminous substance in the distended capillaries of the glomerulus. Chronic parenchymatous nephritis is divided into two stages: first, a stage of enlargement, or the large white kidney; second, a stage of atrophy, or the fatty and contracting kidney.

The symptoms of parenchymatous nephritis in its two forms are systematically and well described. After describing the symptoms usually produced by acute nephritis, mention is made of those interesting and rare cases of the disease without dropsy, as well as of the temporary absence, even in grave cases, of albuminuria and casts. In chronic parenchymatous nephritis, general dropsy is almost always present, accompanied by anæmia and debility. The urine in the first stage is diminished in quantity, of low specific gravity, contains a large quantity of albumen, and throws down a copious white sediment containing chiefly granular, fatty, and waxy casts, granular débris, free fatty cells, leucocytes, and occasionally red blood corpuscles. The normal constituents, particularly the urea, are diminished. Dr. Tyson's experience is opposed

to Bartel's statements, that at the height of the disease the specific gravity is above the normal, and that the quantity of albumen rises with the specific gravity. In the author's experience urines of low specific gravity contain the most albumen. Uræmia is rare in this form of nephritis, partly because, as Bartels had suggested, the physiological sources of urea are diminished by mal-assimilation and diminished tissue-waste, and partly because some of the urea may be stored in the dropsical fluid. The stage of atrophy is to be diagnosed by knowledge of the previous history, by hypertrophy of the left ventricle, by diminution of the dropsy, by increased quantity of urine and lessened amount of albumen. In distinction from the contracted kidney of interstitial nephritis, the quantity of urine is still within the normal, and contains more albumen, and larger, more numerous, and various casts than in the latter disease. Uræmia is still infrequent, but is rather more common than in the stage of enlargement. Retinal changes are less common than in interstitial nephritis. The prognosis is unfavourable as regards recovery, most cases terminating within two years, and sometimes within a few months. Over twenty pages are devoted to the treatment of acute and chronic parenchymatous nephritis. The therapeutical views inculcated are marked by good sense and sound judgment. In acute nephritis, rest, quietude, and warmth are to be maintained. If the urine is scanty, dry or wet cups and warm fomentations to the loins are to be employed. Purgatives are recommended, not only to secure a complemental act of secretion, but also to relieve congestion, and to promote the absorption and prompt action of other remedies. For diaphoretic effects, jaborandi or pilocârpine and warm baths or packs are to be employed. The infusion of digitalis, the salines, and diluent drinks are the best diuretics. Milk is the typical food; animal flesh should be avoided, because it increases the production of urea. Bleeding from the arm is recommended for the relief of uræmic coma and convulsions, if the patient is not too feeble. Excellent results sometimes follow the administration of chloral hydrate in convulsions. He cautions against the use of opium in uræmic convulsions, and believes that he has seen death accelerated by a dose of opium in itself insufficient to produce fatal results. In convalescence from acute Bright's disease, as well as in chronic Bright's disease, tonics should be employed. In chronic Bright's disease, the author has never succeeded in diminishing the quantity of albumen by tannic and gallic acids. He thinks that he has obtained some effect in this direction by the use of ergot. He has observed a diminution in the quantity of albumen under the use of sandalwood-oil, and recommends it for trial in cases of obstinate albuminuria. Fuchsin and rosanilin he has not tested.

Three stages of *lardaceous disease of the kidney* are distinguished: first, a stage of waxy degeneration confined to the glomeruli; second, one in which the degeneration has extended to the vasa recta and other bloodvessels, and possibly to the membranæ propriæ and even to the epithelial cells of the tubes; and third, a stage of atrophy. In the first stage there are no changes in the epithelial cells; in the second these may be fatty; in the third there is "hypernucleated intertubal overgrowth" as the author rather curiously expresses it. This division we believe to be essentially schematic and not based upon pathological observations. It is doubtful whether there is any form of waxy kidney of any clinical importance, where nephritic changes in the epithelial cells and in the interstitial tissue are absent. As regards the causes of this disease, it is to be noted

that the author, together with George Johnson, regards chronic albuminuria itself as a cause of waxy degeneration, and thus explains in certain cases the combination of chronic parenchymatous nephritis, with waxy disease of the kidney. In lardaceous renal disease, there is general dropsy, but this is rarely as extreme as in parenchymatous nephritis. The urine is increased in quantity, of low specific gravity, light in colour, loaded with albumen, and contains but few casts, these being chiefly hyaline and waxy; but in addition perhaps fatty casts and free fatty epithelium may be found. Uræmia is extremely rare, as the urea and extractives are eliminated in sufficient amount to prevent this. Of capital importance in diagnosis is the previous history of the patient, and the recognition of coincident waxy enlargement of the liver and spleen, but even under these circumstances unusual difficulties may attend the diagnosis. The author does not emphasize sufficiently the considerable variation in symptoms which may be observed in different cases of waxy kidney. No mention is made of the cases of even extensive waxy disease of the kidneys without albuminuria which have been reported by Litten. Under treatment especial importance is very properly assigned to prophylactic measures.

Under the causes of *interstitial nephritis*, a remarkable example of the influence of heredity in the causation of Bright's disease is mentioned. In this instance, which came under the author's notice, it was determined that no less than eleven members of one family had been affected with the disease. A similar, although less striking, instance is known to the reviewer, and it is believed that more attention should be given to hereditary influence in the etiology of Bright's disease than has hitherto been the case. The influence of alcohol as a cause of Bright's disease, the author thinks, has been over-estimated. Although the parts of the work relating to the causation of the different forms of Bright's disease are reasonably full, yet we believe that their value would have been increased still further by the introduction of some of the results obtained by Bamberger's analysis of over 2000 cases in which a post-mortem examination was made in Vienna. The morbid changes observed in kidneys affected with chronic interstitial nephritis are well described. We can hardly understand, however, why so well known a fact as "the presence of an increased amount of fat surrounding the contracted kidney, even in emaciated subjects," should be mentioned as a recent discovery of Da Costa and Longstreth. Johnson's views as to the nature and cause of the cardio-vascular changes in this form of Bright's disease are, in the main, those adopted by the author. He admits, with Gull and Sutton, also an increase of the outer or fibrous coat of the arteries, but he dismisses very summarily the views of these writers as to the primary nature of the arterio-capillary fibrosis, and as to the cause of the hypertrophy of the heart. For the latter Johnson's "stopcock theory" is accepted. The observations and views of Da Costa and Longstreth relating to lesions of the renal ganglia and the cause of hypertrophy of the heart, are stated without criticism. The author cautions against mistaking senile atrophy of the kidneys for true interstitial nephritis, and thinks that Gull and Sutton have fallen into this error. The clinical history with all its insidious characters, the complications, the diagnosis, the prognosis, and the treatment of chronic interstitial nephritis, are handled with a full appreciation of the important contributions made to our knowledge of this disease within the last few years.

Dr. Norris's chapter on *retinitis in Bright's disease* is to be commended for its conciseness, and at the same time fulness as regards the essential points. It opens with a short historical introduction, and closes with a reference to treatises containing a full discussion of the subject.

The author regrets that he has no contributions to offer concerning the presence of bacteria in *suppurative interstitial nephritis*. This we also regret, for we believe that by proper methods their presence can be demonstrated in the majority, if not in all, of the cases of this disease in the early stages. This is one of the few diseases in which the pathogenetic influence of bacteria is easily demonstrable. The author's view, however, is that, "supposing the observations of Klebs and Ebstein to be correct, the question of the parasitic origin of pyelo-nephritis becomes only a part of that of the parasitic origin of disease generally, which, to say the most, must be considered, *not proven*." The author propounds the singular question: "How long can obstructed conditions of the ureter and pelvis of the kidney exist before producing suppurative nephritis?" His answer is that after three years, if not before, "the corresponding kidney or kidneys are probably the seat of suppurative nephritis." The obstructed conditions are of course not necessarily ever followed by suppurative nephritis, the former may exist for a long lifetime without the latter.

Cyanotic induration of the kidney is regarded as a form of interstitial nephritis without marked lobulation of the surface, and with less interstitial new-growth than in the cirrhotic kidney. The process is "in the main one of simple hypernutrition resulting from a copious access of pabulum." Inasmuch as the affected kidney receives less than the normal quantum of arterial blood, this explanation cannot be considered a very fortunate one. While there is no doubt that chronic interstitial nephritis may accompany valvular disease of the heart, and doubtless in some cases be a result of the latter, we do not believe that anatomical investigations sustain Dr. Tyson's position that the ordinary cases of cyanotic induration are examples of interstitial nephritis. The symptoms are those usually described as attending cardiac disease with chronic passive congestion of the kidneys.

The last eighty-four pages of the book are devoted to the consideration of diabetes mellitus and diabetes insipidus. Dr. Tyson's account of *diabetes mellitus* is admirable in all respects. He gives fully the different theories as to the pathogenesis of the disease. For the sake of completeness Huppert's theory advocated by Pettenkofer and Voit, might have been added to the chaotic mass. Excepting Ebstein's observations on renal changes, all that is known of the pathological anatomy of diabetes mellitus is presented. Under causation the author notes the rather frequent occurrence of the disease in physicians engaged in laborious practice. Although he has no especially novel views to offer concerning the symptoms and the treatment, his consideration of these subjects is so systematically arranged and so full of practical suggestions that it will be a most useful guide to practitioners. The theories concerning the cause of diabetic coma are briefly mentioned but not criticized. A description of the appearance of the fundus oculi, called by Dr. Heyl intraocular lipæmia, is introduced, and the condition is illustrated by a coloured lithograph in the frontispiece. Dr. Tyson naturally gives the first place to the dietetic and hygienic management of the disease, and here his suggestions will be found to be in accordance with the results of the best experience and physiological experiments. A convenient summary

of articles of food suitable for diabetics is introduced. From the medicinal treatment may be selected, the recommendation of ergot as a useful and rationally indicated drug.

Diabetes insipidus is believed by the author to be the result of some irritation, either direct or reflex, of a centre in the medulla oblongata above the diabetic centre, or of the sympathetic ganglia in the abdomen. "The immediate cause is a dilatation, first, of the arterioles, and then of the capillary bloodvessels of the kidney, through whose thinned and stretched walls, the water osmoses readily," although the possibility of an excito-secretory influence exerted upon the gland-cells of the kidney, as suggested by Eckhard, is admitted. As regards prognosis, "recovery is almost as infrequent as death." Among the therapeutical measures which the author mentions are the use of ergot, blisters at the nape of the neck, and the constant galvanic current. In general the supply of water should not be limited.

Dr. Tyson's treatise we believe has been prepared with great care. It is a clear and valuable presentation of the subjects of which it treats.

W. H. W.

ART. XXIII.—*Osteotomy, with an Inquiry into the Ætiology and Pathology of Knock-knee, Bow-leg, and other Osseous Deformities of the Lower Limbs.* By WILLIAM MACEWEN, M.D., Surgeon and Lecturer on Clinical Surgery, Glasgow Royal Infirmary. 8vo. pp. xvi., 181. London: J. & A. Churchill, 1880.

THIS book is worthy of the closest study by surgeons. It deals with a subject in which great advances have been made of late years. It is the work of a gentleman who has made valuable contributions to its literature, of one who evidently writes from an experimental knowledge of the matter.

Dr. Macewen, and it is a great pleasure to an American to be able to speak of so good a surgeon as doctor, writes in a singularly simple and unpretentious way, which makes the reader feel as if he was being talked to, and at once brings him into close sympathy with the writer. Yet the very straightforwardness of the author has apparently prevented his bestowing that care upon his style, by which alone, in the absence of extended practice in writing, perfect clearness of expression can be secured. For this reason, and from the importance of the details of the subject, the book is one not to be lightly skimmed, but rather to be carefully read, and sometimes pondered over, if the teachings of its writer would be thoroughly understood.

The first chapter is devoted to a consideration of the etiology of those curvatures in bone which generally make a resort to osteotomy necessary, and Dr. Macewen does not hesitate to declare that they are traceable to rickets—thinking, as he does, that, from some cases which have occurred within his own observation, he is justified in extending the definition of rachitis to the disease established after the years of childhood.

Our author thinks that while rachitis is not generally hereditary, it is so in some cases, and that, contrary to the received opinion, the disease is sometimes derived from the father. This last fact he thinks is supported

by two cases he has himself observed, and which he narrates. Although the condition of the mother during utero-gestation exerts a most powerful influence upon her offspring, and her enfeebled condition during that period may be the cause of rickets, yet our author does not think that rachitis can be regarded as hereditary in the same sense that struma and phthisis are. It is this fact of the impoverished condition of the maternal system that, in Dr. Macewen's opinion, accounts for the often repeated observation that in large families, it is the children of later birth who suffer most from rickets. As has been already indicated, our author is well convinced that epidemic diseases, in the enfeebled conditions which often result therefrom, are quite sufficient to cause the development of rickets long after birth. He does not think that this well-established sequence can be accounted for by the suggestion that acute rachitis may have been mistaken for one of the exanthemata, as the cases of this kind coming under his observation have been under the care of practitioners too widely separated to make the supposition a likely one. Any disease or injury which produces the necessary enfeeblement may have rachitis among its true sequelæ, while poor food, unfavourable hygienic surroundings, and especially bad air, are fruitful sources of the evil. The absence of earthy salts from a very pure water cannot be proved to have any such effect as has been often attributed to it. Dr. Macewen concludes that very rarely rickets depends upon heredity, but that very generally it is traceable to mal-nutrition of sufficient extent and sufficient duration.

Chapter II. treats of the age at which rickets may make its appearance, and it is shown that, though most common in very early life, it is by no means confined to that period, but may appear at any time during the period of growth; while the effects are more marked the earlier the disease has made its appearance.

Chapter III. is concerned with certain of the effects of rickets, which acting principally upon the osseous system especially concern surgeons. These changes are essentially dependent upon an excessive preparation for ossification, with an arrest of that process. There is "merely a change in the quantity and arrangement of normal structures and secretions" (Jenner), and the structure, which should normally harden into bone, continuing cartilaginous accounts for the swelling and distortion which ensue. When the disease is stayed, ossification or calcification takes place, and eburnated bone is the result. Our author thinks it very important to keep in mind the facts that only one part of the skeleton may be much affected, that the degree may be very varied, and that the softening in the shaft of a long bone may be not at all proportionate to the enlargement which exists at the ends of the bones.

Dr. Macewen thinks that in every case the bending of bone which accompanies rickets is produced, not by muscular action, but rather by the superimposed weight of the body. Indeed, so general is this law, that, although the diagnostic enlargement of the ends of the bones is so frequently seen, in but three cases has our author observed bending in the upper extremity, and in every one of these exceptional cases the cause could be distinctly traced to the fact of the extremity having been used to support the weight of the body while the bones were unequally developed by the existence of rickets.

Genu valgum is considered at some length. We have not space to follow Dr. Macewen through his careful study of this deformity, but extract for the benefit of our readers his *résumé*, which is as follows:—

"Genu valgum is an osseous deformity of the lower extremity, consisting, as a rule, of more than one element. The most constant factor is an inward curve of the lower third of the femur, which lowers the level of the internal and raises that of the external condyle. The second factor is an abnormal elongation of the internal condyle, which is frequently found and generally associated with the inward curve of the lower third of the femur. These, separately or combined, form the chief pathological anatomical features in knock-knee. There is another element found in about one-third of the whole number of cases, consisting of an increase of osseous matter on the inner side of the tibial diaphysis at its proximal extremity, which causes the head to sit askew on the shaft. This tibial deformity, when present, is so to a small extent, though in a few it forms a prominent feature. In some cases a somewhat similar osseous increase is found on the inner side of the epiphysial junction."

After a short consideration of genu varum, Dr. Macewen goes on to the main part of his subject, namely, osteotomy as practised for the relief of these deformities. After giving due credit to Dr. Barton, of Philadelphia, for the operation performed by him, the subject of operative proceedings is historically considered down to the time it was first performed antiseptically by Volkmann of Halle, who published his first two cases in March, 1875. In April of the same year Dr. Macewen made his first antiseptic osteotomy, and he says it "has been greatly extended, and it has met with such success as to insure it a permanent place as a safe, certain, and most successful procedure." It is certainly one of that growing number of serious operations which by the increased success which attends their performance under the methods introduced by Mr. Lister, have shed lustre upon his name.

A very careful description is given of the chisels and osteotomes which Dr. Macewen has devised, and proved to be efficient. The chisel has the bevel upon one side, as in the ordinary instrument in use among carpenters, while the "osteotome" is bevelled on both sides, the bevel being continued from the edge to the handle. Particular care is bestowed upon the temper of these instrument, that, on the one hand, they shall not be so hard as to involve risk of breaking, or, on the other, so soft as to turn or curl when brought into contact with bone. Dr. Macewen gives such descriptions of the tempering necessary as ought to enable any instrument-maker to make them successfully, and suggests that the correct temper should be proved by trial upon a fresh ox bone.

In performing osteotomy, after the administration of an anæsthetic, the limb to be operated upon should be rendered bloodless by the application of an Esmarch bandage and supported upon a sand pillow to afford firmness and the necessary resistance. Dr. Macewen thinks the incision should be as direct as possible, and parallel to the course of the muscular fibres, if practicable. The bistoury with which the incision is made through the soft parts down to the bone, should be retained in situ until it has served as a guide for the introduction of the osteotome. This incision should be made at one stroke, and need not be more than from one-half to one inch in length, and as it may not and probably will not correspond to the direction in which the osteotome is to act, it should if possible not penetrate the periosteum, and when this variation in the line of action exists, the osteotome or chisel should be so manipulated as to avoid scraping off a portion of periosteum. Care is to be exercised that from muscular contraction, the incision is not made of greater length than is necessary, and to avoid this error, as also a want of correspondence between the wound in the muscle and that in the skin, the bistoury should

be used with deliberation as well as firmness. The beginner is advised, however, to make a larger incision rather than one which from his lack of experience may be too small. We cannot follow our author through the detailed directions for the use of the osteotome or chisel, but must refer the reader to the book itself, where he will find the matter treated with admirably concise minuteness.

With Chapter X. begins the consideration of special osteotomies, it being concerned with the hip-joint. The risk of forcible rupture in cases of bony anchylosis of this joint is pointed out, and osteotomy recommended as the safer expedient. One case is given in which osteotomy was resorted to most successfully. An incision an inch and a half long was made down to the neck of the femur, and the condition of the parts thoroughly examined with the finger. Firm osseous union of the head of the bone with the ilium being thus made out, the neck of the femur was divided by an osteotome, and the limb straightened. All this was done under the spray and full antiseptic precautions, and was followed by union and cure in about one month. Dr. Macewen deems this method preferable to the subcutaneous procedure without antiseptics, although Messrs. Adams and Gant have had considerable success by that mode of operating.

Chapter XI. deals with the operations rendered necessary by osseous anchylosis of the knee in a vicious position. Generally a division of the femur is sufficient, but the surgeon is sometimes required to supplement this operation by a division of the tibia. Dr. Macewen has operated successfully without suppuration in six cases, in only one of which did he have to make a section of the tibia.

In Chapter XII. the subject of knock-knee is considered, with the various devices which have been resorted to in the attempt to remedy this deformity by other means than osteotomy. Dr. Macewen thinks that sections of either tendons or ligaments are rarely followed by good results, while they are sometimes attended by very unfortunate ones, such as a loose joint, or paralysis from injury to nervous structures. He also condemns the forcible straightening of the extremity, as very uncertain in results, very unscientific in method, and fully equal in risk to an antiseptic osteotomy. This latter operation as applied to the knee-joint forms the subject of the following five chapters—indeed it is the central point of the volume. Ogston's operation, which consists of separating the internal condyle of the femur, is not considered satisfactory, for the reason that it opens the joint, and when the limb is straightened, the condyle being pushed up, there is a sharp edge of bone left projecting into the articulation. Various modifications of Ogston's brilliant operation, which Dr. Macewen regards as a true stroke of genius, have been devised, looking to a partial separation of the condyle without entering the joint at the operation, but they are all open to the objection that when the narrow bridge of bone by which the condyle is left united to the femur is bent or broken, which must take place when the limb is straightened, and without which the necessary displacement cannot be obtained, the integrity of the joint must be impaired. Then in practice it is difficult to make the section through the condyle with such precision as not to enter the joint, while experience shows that the pathological deformity is not limited to the elongation of the condyle, but includes as well a bending inwards of the lower third of the femur. It is admitted that very good results have followed Ogston's operation, but there have been some bad ones, and Dr. Macewen thinks the injury inflicted is so severe that it is not wise to

unnecessarily call upon the bounty of nature to make the repair which the simpler and more effectual operation of supra-condyloid osteotomy, which he has introduced, does not require.

In some cases Dr. Macewen thinks it may be advisable to divide the tibia after the operation has been done upon the femur, yet this is seldom the case, and with increasing experience is but rarely resorted to by him. He has never found it necessary to meddle with the fibula. This opinion is in opposition to Mr. Barwell's view, but it is one in which most of those who have paid attention to the subject, and have had practical experience in the matter, are inclined to side with the Scotch surgeon.

Chapter XV. is occupied with the anatomical relations of the parts involved in, and the rationale of, Dr. Macewen's operation. This consists of a simple transverse section of the femur a finger's breadth above the upper part of the external condyle. This line carries the section entirely above the epiphysis, being made from the inside and from behind it will not reach the synovial pouch prolonged beneath the tendon of the quadriceps extensor, the nearest point of the joint, which is thus preserved intact with all its strengthening ligaments. The incision in the soft parts passes above the superior articular artery and below the anastomotica magna. This incision is made "on the inner side of the limb, at a point where the two following lines bisect one another: a line drawn a finger-breadth above the level of the upper border of the external condyle, and a line drawn parallel to, and half an inch in front of the tendon of the adductor magnus," and is made in the longitudinal direction from one-half to one inch long. In making the section of the femur Dr. Macewen recommends the use of two or three osteotomes, beginning with the coarsest, so that those afterwards used may not be bound by the lateral pressure. It is important to follow the line given, as if a lower one is followed, the hard and dense structure of the external condyle being impinged upon will give trouble, and it should be borne in mind that the external antero-posterior diameter is greater than the internal. Keeping these two points in view, there should be no difficulty in making the section through at least two-thirds of the thickness of the bone. The remaining third is either broken or bent by the act of straightening the limb, and this last step does not sever the periosteum on the inner side, an important advantage. The only interference with tendons which Dr. Macewen thinks it wise or necessary often to make, after this supra-condyloid osteotomy, is in aggravated cases to divide that of the biceps, and he is of the opinion that to do this affords fully as much rectification of the line of the limb as that obtained by dividing the tibia.

The wound is of course dressed antiseptically, and the limb placed in a long splint extending up to the side of the body. Dr. Macewen lays stress upon the importance of paying special attention to the circulation, and thinks that the surgeon should not feel satisfied that the dressing is not too tight unless the patient is able to move the toes freely soon after its application. In the after-treatment the thermometer furnishes the principal guide upon which reliance must be placed. When this instrument indicates a temperature below 101° for the first two days, and below 100° during the first two weeks, everything may be regarded as going on well, but any elevation of temperature which cannot be accounted for otherwise should lead to an examination of the dressing, and the same course should be pursued if any stain of blood makes its appearance.

It has been proposed to modify this supra-condyloid operation by making the incision from the outer aspect of the limb, but Dr. Macewen entirely

disapproves of this, and we think the reasons he adduces for his opinion are conclusive.

For genu varum or bow-leg Dr. Macewen advises the same supra-condyloid osteotomy, supplemented, however, by such division of tibia and fibula as the particular case may make requisite. These multiple osteotomies our author is in the habit of doing at the same time. In fact Dr. Macewen has got to regard osteotomy with antiseptic precautions, as hardly a dangerous measure, and his experience seems to warrant his conclusion.

Chapter XIX. treats of anterior tibial curves, and their treatment either by a simple osteotomy or by the removal of a wedge of bone, while Chapter XX. speaks briefly of splints. From Chapter XXI. and last may be gleaned several items of interest. In it we learn that Dr. Macewen has done 835 osteotomies on 557 limbs, belonging to 330 patients. These operations have been by open wounds, and were not subcutaneous, having really been of the nature of compound fractures. While at first only the robust were operated upon, latterly many of the feeble and weakly have been submitted to osteotomy, until at last no cases were refused whose bones were in a proper condition, that is, not soft, or in a stage of ramollissement. With the exception of eight cases all the wounds healed by organization of blood-clot without pus production, and in seven of the eight there was a distinct cause, connected either with the operation or the dressing, to account for the unusual event. In only one was amputation required for gangrene, produced by the patient getting out of bed and twisting the limb in the absence of the nurse. But three deaths occurred: one from pneumonia, contracted prior to the operation, one from tubercular meningitis, and one from diphtheria. Dr. Macewen defends the use of the term "organization of blood-clot" and gives illustrations of the microscopical appearances in the only recent case in which he was enabled to make a post-mortem examination. Dr. Foulis, who made the examination, styles the cells which are formed within the clot—

"granulation cells, for they in no way differ from those seen in antiseptic granulating wounds selected for careful comparison, and whether they were derived from leucocytes, or also, as I think, from a cell growth in the tissues as well, the picture is still one of a wound healing by granulations, though without suppuration. It would seem that the production of granulations is kept down to the minimum in perfectly antiseptic wounds; the fate of the blood-clot is to be absorbed in a passive manner." Dr. Macewen concludes that the "healing open wound by organization of blood-clot is the safest, quickest, and best."

We have sufficiently expressed our opinion of the value of this book. Its appearance of candour and fairness must commend it to every one who studies it, and it is based upon such an amount of experience as entitles the conclusions of its author to most respectful consideration. No one will read far into it without seeing that the author's object has not been to make a book, but that he has written because he has something to say. He has said it well, and the profession is a gainer by what Dr. Macewen has written. There are very many new books, but it is our fortune to meet with few that are like this one, a fair statement of original work and accurate observation, and therefore of great value. S. A.

ART. XXIV.—*Bovine Tuberculosis in Man; an Account of the Pathology of Suspected Cases.* By CHARLES CREIGHTON, M.D., M.A. Cantab., Demonstrator of Anatomy in the University of Cambridge. 8vo. pp. xi., 119. London: Macmillan & Co., 1881.

IN this book the author hopes to show that certain cases of tuberculosis in man can be proved by their morphological characters to have been derived from the tuberculosis of cattle. His attention was directed to the subject by the peculiar appearances presented in twelve cases which occurred at Addenbrooke's Hospital, Cambridge, England, following closely one after the other. For these cases, he cannot point out any definite source of infection, nor has he attempted to reproduce the disease in animals by experiment, but relies solely upon the specific and distinctive characters of the tuberculosis that affects the bovine species and the morphological identity which he will prove between that kind of tuberculosis and the disease that occurred in the group of twelve cases in man. As a basis of what he is about to prove, he regards the "structural mimicry that resides in infection" as of the first importance. He believes in the specific character of bovine tuberculosis, and mentions the various popular names of the disease: Meerlinsigkeit, Ger. (duckweed disease); Perlsucht, Ger. (pearly disease); pommelière, Fr. (potato disease); angleberries, Scotland; grapes, England; which, although differing among themselves, always refer to the peculiar growths upon the serous surfaces as characteristic. This is the substance of the first chapter, which, together with the whole book, could have been very much shortened without injuring his case, by a careful revision, especially in the matter of repetition of what has been once stated.

Chapter II. gives a "summary of the pathological anatomy of tuberculosis in the bovine species." The first point to which he calls attention is the change to be observed in the serous membranes. He quotes from Walley to show that in the early stages there is a diffuse and extensive capillary congestion, followed rapidly by the formation of innumerable minute, villous-like, vascular processes, giving to the membrane an appearance closely resembling the pile on red velvet. In the course of time the extreme vascularity of these little processes passes off, and they assume a definite shape and become converted into small, hard, globular bodies, of the colour of connective tissue, slightly gray and translucent, and constitute the so-called fibrous tubercle. When tuberculization is very rapid, distinct polypoid masses may be formed upon the membrane. And he quotes Virchow, as saying, "that whatever analogy this development may present in general with the tuberculosis of man, the size and pedunculated disposition of the nodules always afford a striking means of distinguishing them."

The condition of the lungs is next considered, and the description of Trasbot is followed, who states "that the tubercles in the lungs are of small size, and that the larger masses are formed from their confluence. When the tubercles are first formed, there are no vessels in their interior; in consequence of this they undergo degeneration in the centre, and are either calcified or softened. Calcification takes place in the middle, while the periphery remains fibrous or simulates a capsule. When softening takes place, it extends to the periphery, and the contents being removed

in some way there result closed cavities, which may reach the size of a walnut, from the confluence of several adjacent nodules. The walls of these cavities are quite smooth and thick." This, Dr. Creighton thinks, is the way in which the greater part of the cavities found in the lungs originate, and the idea that they are due to bronchiectasis (Virchow) he regards as arising from an error of observation. It is upon the occurrence of such closed vomicæ in the lungs of his cases that he lays great weight in the identification of the process.

In cattle there is so often found associated disease of the lymph-glands, that another of the popular names is "gland disease." In his cases, again, he regards this association as an important factor.

In the other organs of cattle, the tubercles are found, but in the liver they are not encysted in the true sense of the word. Ulcers occur in the intestine, and the disease often invades the genito-urinary tract, and lastly, the mammary gland.

Chapter III. is a short *résumé* of the work of Gerlach on the communicability of bovine tuberculosis to other animals by experiment. And the point which the author wishes to call attention to is, that the disease produced in the animals experimented upon has the same character as the original, and this mimicry shows itself especially in growths on the pleura along the sharp margin of the lungs. It is true this is but a very feeble reproduction of the original, in fact, a mimicry, but, nevertheless, is to be "regarded as the beginning of Perlsucht."

In Chapter IV. he gives the clinical history and anatomical appearances as found by him in twelve cases of tuberculosis in man. The histology is preserved for a subsequent chapter. The clinical history throws but little light upon the cases except to show that with one exception they were quite acute (which it will be remembered is the contrary of the course taken by the disease in cattle). The specific nature of the affection is based simply upon the occurrence of more or less flattened or polypoid nodules upon the serous surfaces, and especially along the free edge of the lung, with wedge-shaped medullary looking masses and closed cavities having thickened walls in the substance of the lungs, giving to it a peculiar "crumpet-like" appearance.

In Case 1 there were simply nodules in the lung. Case 2 had nodules in the lung, with flat tubercles on the serous surfaces. Case 3 had cheesy bronchial glands, with white, sessile, and even pedunculated tubercles on the pleura. There were large white tubercles in the lungs. In Case 4 a lung contained several sloughing and putrid cavities, with softened packets of bronchial glands, and large round tubercles in the parenchyma. In Case 5 there was found an enormous cluster of enlarged portal glands containing round nodules. Bronchial and mesenteric glands also enlarged. Tubercles upon the serous surfaces, some distinctly pedunculated, also in the lungs together with closed vomicæ. Case 6 presented nothing upon the serous surface, the identity resting upon the occurrence of closed cavities in the left apex ("Crumpet" lung). In Case 7 the lungs were found extensively destroyed, the left upper lobe being replaced by a cavity, and a second the size of a billiard ball occupying the right side. The walls of these cavities were dense and cartilaginous. From the pleura hung a number of flat pendulous nodules, and the lower margin of one lung had a beaded appearance. In Case 8 occur again what the author considers as characteristic outgrowths from the pleural surface, with white and centrally softened tubercles in the lung. The bronchial glands were

also enlarged and softened. Case 9 is one of cardiac disease in which were seen the "duckweed" variety of pleural outgrowths, and also the rounded and beaded condition of the free edge. In the parenchyma of the lung there were whitish tubercles of considerable size, and from the peritoneal surface flat excrescences. Mesenteric glands enlarged and calcified. In Case 10 there were tubercles of the lungs, with a wedge-shaped infarct of new growth in one of them. Again tubercles and flat masses on the peritoneum. Cases 11 and 12 had whitish-gray medullary masses and wedge-shaped masses in the lungs. The glands were especially affected, but there was very little of the peculiar outgrowth from the serous surfaces, while white medullary swelling and ulceration of the follicles of the intestine were noticed.

In five of these twelve cases the "characteristic" pleural outgrowths are wanting, or only very slightly marked, and the specific nature of the affection rests upon the peculiar shape of the masses in the parenchyma, which have a tendency to form closed cavities with smooth walls.

Chapter V. is devoted to a consideration of the formations on the serous membranes. It is but an expansion of what has already been stated, viz., that the tubercles begin as vascular excrescences, and their occurrence on the thin margin of the lung is brought forward as marks of their specific character. He acknowledges that in but three of his cases (2, 5, and 10) large flat tubercles can be said to have been really formed; but thinks "that the slight indications found on the lungs in the other cases are something special and specific beyond doubt." He, however, does not give the finer histological appearances which would enable them to be distinguished from the results of pleurisy or peritonitis.

Chapter VI. takes up the disease in the lungs. He supports the gross appearances in his cases on the description of Trasbot, already often quoted, of the closed vomicæ in the lungs of cattle, and his histological evidence rests on the similarity which exists in the structure of the tubercles in his cases and those which occurred in the lungs of rabbits that had been fed on masses of Perlsucht by Orth;—the distinctive point being the presence of great numbers of giant cells of a perfect type in the nodules. He, however, admits that these are not pathognomonic, but are only of value when taken in connection with the presence of the characteristic outgrowths from the serous surfaces and the affection of the glands. The occurrence of such large numbers of giant cells he considers as standing in direct relation with the attempts at vascularization, as shown by the large number of vessels at the periphery of the tubercles.

Chapter VII. treats of the condition of the lymphatic glands. He shows the similarity which exists between the affected glands in his cases and in Perlsucht both in the gross and microscopic appearance, and he considers that the tuberculosis of the lymphatic glands is not the origin of the tuberculosis elsewhere in the body, as has been held by many, but is a co-ordinate part of a general infection. The evidence presented in this chapter is one derived principally from analogy, especially with syphilis, which he considers this disease closely resembles in its course.

In Chapter VIII. an account is given of the intestinal lesion which he found in three of the twelve cases. In two of these the lesions were recent, in one consisting merely of swelling of the follicles with occasional loss of substance; in the other the ulcerations were of the ordinary round kind. He dwells upon the third case at considerable length. It was that of a woman who had been in the hospital for what was diagnosticated as

typhoid fever. She returned seven months later with symptoms of rather a rheumatic character, but before her death the diagnosis of acute miliary tuberculosis was established. There was found at the autopsy an eruption of flat nodules on the peritoneum, two healed ulcers of the ileum, over the base of which, between the outer muscular coat and the serous surface, was a cicatrical thickening in which was seen the peculiar arrangement of epithelioid about giant cells, which he considers characteristic of bovine tuberculosis. This case he regards not as one of typhoid fever from the start, but as Perlsucht. His wording, however, is a little doubtful, for he says (p. 88): "they were originally ulcers of typhoid fever, but in their healing, or in their subsequent induration, they retained their specific infective property, which afterwards manifested itself in the general tuberculosis," etc.

The rest of the chapter he devotes to attempting to show that many recorded cases of typhoid fever in which tubercles have been found post-mortem are probably bovine tuberculosis. The account upon which he lays the greatest stress is the report of 20 cases which occurred at the Bristol Infirmary, and in which the clinical symptoms were regarded as typhoid fever. Four of the boys died, and there were found tubercles of the serous surfaces as well as ulceration of Peyer's patches in all four cases. This he regards as evidence of bovine tuberculosis, and considers the epidemic as one of that disease which the boys had contracted from drinking infected milk, although defects in the drainage of the school were discovered. In the other 16 cases the disease was of a lighter character, and ended in recovery.

Chapter IX., and last, is a summary of what has already been said.

In reviewing the evidence presented to us by Dr. Creighton, we feel, as he seems to, the rather slim foundation on which he has rested his assumptions. His argument rests first upon the fact that the Perlsucht of cattle can be produced in other animals by feeding them with masses of the disease, and with milk, the latter being presumably the way in which man could acquire it. The experiments of Gerlach, Klebs, Orth, and Virchow, are held as establishing this fact: but of these, the series conducted by Virchow is the latest, and by far the most complete, and the very doubtful success which has attended it makes the question at least still to be considered as *sub judice*.

Turning to the part which he has done himself, it is a striking fact that there are apparently no cases which have come under his observation since his attention was directed to the subject, but what have presented to him the characteristic appearance of bovine tuberculosis, and yet he does not deny the existence of cases originating in other ways. Among his cases are certainly some which need stronger confirmation; take Case 4 (p. 32), for example, which is reported simply as having several sloughing or putrid cavities with large round tubercles in the intervening lung substance. No account is given of the microscopic appearances, and there is no way without this careful examination by which such cavities and nodules can be distinguished from those resulting from chronic, miliary, and cheesy pneumonia. Certainly a case like this shows a biased judgment on the part of the observer, and makes us hesitate in accepting his conclusions without the fullest proof. It looks almost as if he had taken his cases from one "dust bin of pathology" (as he calls tuberculosis), and had transferred them to another dust bin called bovine tuberculosis. The value of the mimicry of infection must not be rated too highly in dis-

tinguishing between different kinds of tuberculosis, when it must first be shown that what are regarded as the expression of a specific tuberculosis ("the duckweed" and "pearls" on the serosa in his cases) are not the products of chronic inflammatory changes in which tubercles have been developed secondarily. The proof of the anatomical identity and the possibility of distinguishing post-mortem cases of bovine tuberculosis in man, must rest on finer and more conclusive evidence than that presented by Dr. Creighton. His suggestion, however, is very valuable, and he certainly deserves the thanks of all pathologists for calling attention to the subject in so forcible a way, and although we cannot agree that the proof he has presented is at all complete, we fully appreciate his labour and zeal in giving such an attractive and well published book.

W. F. W.

ART. XXV.—*St. Bartholomew's Hospital Reports.* Edited by W. S. CHURCH, M.D., and ALFRED WILLETT, F.R.C.S. Vol. XVI. 8vo. pp. xxvii., 363, 123. London: Smith, Elder & Co., 1880.

IN noticing the contents of this serial volume, we shall pursue the course usually adopted in this Journal, and, separating the surgical and medical papers, speak first of those possessing special interest to surgeons, although this year some of the papers we class as surgical are contributed by medical men.

The first article is *A Contribution to the Minute Anatomy of the Organ of Jacobson*, by E. KLEIN, M.D., F.R.S. As its title indicates it is an examination of Jacobson's gland, and in it are well exhibited the scientific thoroughness and ability of its author. As the result of his observations Mr. Klein is not disposed to adopt the somewhat fanciful view of Kölliker, that the function of this body is a quasi-subjective one, namely, to ascertain the chemical constitution of the animal's own juices, but is rather inclined to think that its rudimentary condition in man points to its having something to do with the very high development of the sense of smell possessed by some of the brutes. The suggestion is modestly made, but seems quite reasonable.

Foreign Bodies in the Air-passages, by SAMUEL GEE, M.D. While contributed by a medical man, the subject of this paper is one with which surgeons generally have to do. It consists of an account of two cases, in one of which a fruit stone, in the other a piece of bone, passed through the larynx. In the first case tracheotomy was unsuccessfully performed, and the foreign body was found in the right bronchus after the death of the child. The second case had a more happy issue, the piece of bone, deprived of all but its calcareous framework, being coughed up about one month after its entrance into the throat. The case is narrated in the words of the sufferer, a clergyman, and is therefore void of any careful or accurate description.

The next article is of decided value, being headed *Some Cases of Abdominal Surgery (with remarks)*, by HOWARD MARSH. The first of the cases was one of intestinal obstruction, in which an internal tumour could be made out through the abdominal walls, and in which there was also a small, tense, and apparently strangulated hernia. Although the sensations of pain were all referred to the abdominal tumour it was thought

best to operate upon the hernia, and when this was found to contain nothing but a large amount of abdominal fluid, an abdominal section was made, and twelve inches of the jejunum were found to have passed through an opening in the great omentum. The well-defined edge of this opening was readily divided, and the congested gut released. At first everything promised fairly, and all the symptoms were relieved, but death ultimately ensued after ten days from septicæmia.

Mr. Marsh thinks, with justice, that there is good ground to hope for the attainment of greater diagnostic accuracy in these always obscure cases, and that as a contribution to this end every case should be reported, whether successful or otherwise, as it is by the knowledge of the mistakes competent surgeons have made, we may hope to avoid their recurrence. In this particular case the herniotomy was proved to be useless, and of course increased the danger; but it seems to us the error could hardly have been avoided, while the unfavourable result would appear to have been fully accounted for by the condition of the patient's constitution.

As part of the same paper three successful cases of herniotomy in young adults are narrated. They were all congenital, and the ring was very small in each case. Mr. Marsh's remarks are judicious, and his conclusion that the palm for detrimental surgery should be awarded to prolonged taxis and the putting off of an operation is, in our judgment, indisputable.

Anatomical Variations: an Account of a few of the more interesting Abnormalities, with Remarks on their Morphological significance and their Bearing on the Practice of Surgery, is part of the title of an article by W. J. WALSHAM. It is the result of seven years' observation, and contains many items interesting to the anatomist, and some of which are possessed of importance to surgeons. As is usual, the greater number are muscular, but some concern the vascular and lymphatic systems. Two instances of unusual course of the phrenic nerves—one of peculiar peritoneal attachments, and one of "septed uterus and double vagina" are given; but the paper cannot be analyzed so as to be of interest to the general reader.

On Dilatation of the Uterus in Extroversion of the Bladder, by FRANCIS HENRY CHAMPNEYS, M.B., is a suggestive article. It draws attention to the frequent association of these conditions, and makes some inquiry as to its cause. As prolonged enuresis is fatal by blood poisoning, Mr. Champneys queries whether the early death which so often occurs in cases suffering with extroversions of the bladder may not be traced to this cause.

A very interesting paper is contributed by SAMUEL WEST, M.B., on *Mimic or Phantom Aneurisms*. It contains an account of a series of cases in which the symptoms of aneurism in various vessels appeared and disappeared. The subject is one which has been noticed by Sir James Paget, and will interest all medical men. The localized rhythmical pulsation of arteries has been often observed, and is generally quite amenable to sedative and tonic treatment, but to notice real or apparent temporary dilatation has not been a common observation. It would be interesting to learn whether in any of the cases observed by Dr. West the phantom tumours were ever followed by permanent dilatation. The paper is a suggestive one, well worthy of careful perusal, and should provoke to further study of the subject.

The next surgical paper is an account of *Two Cases of Aural Exostosis*, by A. E. CUMBERBATCH. Mr. Cumberbatch is inclined to think that

these tumours are very often attributable to gout as an irritating cause, that diathesis having been undoubtedly present in seven out of eleven cases observed by him. There is almost always present more or less catarrh of the middle ear. Noticing that the external auditory meatus was narrowed quite as much by swelling of the soft parts as by the bony growth, the author of the article advises a resort to caustics, which, being followed by contraction of the cicatricial tissue, tend to enlarge the lumen of the meatus. Mr. Cumberbatch's experience with this method leads him to think it preferable to attempting the extirpation of the bony growth, which is sometimes sessile and very hard, making its removal difficult, and in some cases impossible. Mr. Cumberbatch announces his intention of trying the galvanic cautery in the next case which comes under his observation.

Mr. W. Morrant Baker next narrates *Two Cases of Acute Arthritis of Infants*, respectively six and nine months old, in which he evacuated pus from the knee-joint by incision with most satisfactory results. The cases are placed upon record to make them available for statistical purposes in the study of this formidable affection, to which attention was drawn by Mr. Thomas Smith in the tenth volume of *St. Bartholomew's Reports*.

Mr. C. B. Lockwood contributed a paper entitled *Cases of Syphilis*. It is the result of a year's residence in the Male Lock Hospital. It does not profess to contain original observations, but is well written and of interest. The most noticeable thing in it is the record of three cases in which hypodermic injections of one-sixth of a grain of nitrate of pilocarpin (jaborandi) were used to aid in the production of sweating, where mercurials and iodides had failed to work amendment. The results were very speedy and good.

A Case of Congenital Absence of one Olfactory Bulb, by T. Claye Shaw, M.D., is very interesting. It occurred in the person of a woman, aged 53, who had been insane for twenty years. The right olfactory bulb and nerve were completely absent, and there were no foramina in the cribriform plate of the ethmoid bone on that side. No suspicions had been entertained of this state of things during life. A cut showing the appearance presented by the front part of the base of the brain accompanies the paper.

Remarks upon Resection of the Tendo-Achillis in Paralytic Talipes Calcaneus, with an Account of a New Method of performing this Operation, by Alfred Willett, is the next surgical paper. Convinced that operative measures for the relief of those cases in which the heel drops as the result of an attenuated tendon, have been too much neglected, Mr. Willett has resected the tendon under the carbolic spray, and, having removed a piece, brought the ends together by wire sutures extending through the integument. Three cases are given in which much good was accomplished by this measure. The details of the operation practised by Mr. Willett are given with admirable conciseness and accuracy.

Port Sanitary Work is the title of a paper left unfinished by the death of its author, Mr. Harry Leach. It deals principally with two points, namely, ventilation and water supply. In Great Britain the number of the population who live afloat is very large, and the sanitary condition of their surroundings is gradually receiving the attention which the importance of the subject demands. In this country, while our population similarly situated is large, outside of the navy almost no attention is paid to the subject. The Marine-Hospital cares for merchant seamen when they

are sick, but we are not aware of any efforts being made to diminish the amount of disease by removing its causes, or of any preventive sanitary measures being ever instituted. The evil is undoubted and great. It is a field in which much service for humanity could be done. Mr. Leach is convinced, and we think his conclusion indubitable, that ventilation is best effected by the exhaust system rather than by the reverse method of pumping air into the vessel. He draws attention to the importance of furnishing a pure water supply instead of taking it direct from rivers in much frequented ports. The paper bears evidence of the incompleteness in which it was left by its author, but it is interesting, and should serve to direct attention to the very important subject of which it treats.

It is noteworthy that but one of the surgeons and two of the assistant-surgeons connected with this great hospital have thought it worth while to contribute to this volume of its reports. S. A.

We shall now notice the medical papers of the volume.

The irregularities of digestion, so common in all forms of disorders of the nervous system, and more especially among the inmates of asylums for the insane, have led Dr. T. CLAYE SHAW to examine, post-mortem, the structure of the intestines in a series of cases. He communicates the results of his studies in a paper *On Some Intestinal Lesions of the Insane*, in which he states that he met with lesions so constantly and of so profound a nature that it occurred to him that many serious symptoms observed during life may be directly connected with, and interpreted by, them, and a clue thus obtained to a more rational line of treatment both by diet and medicine. More especially observed in the subjects of dementia and general paralysis, they may also be recognized in acute insanity, and even in persons who are merely in "a nervous condition." The appearances are described as follows: "The lesions are situated chiefly in the colon and in the jejunum, they are patches of ulceration sometimes so extensive as to resemble a honey-comb network. The edges are usually slightly raised, and perhaps reddened, but the ulcers are at other times more like punchings out of the mucous membrane, and there is often a little loose gelatinous material." The author attributes this degeneration of tissue of the intestinal canal, primarily, to irregular and imperfect action of the involuntary muscular fibre of the bowel, loss of power over the sphincter being a common sign of nervous disorder.

Dr. REGINALD SOUTHEY contributes a very interesting case of *Symmetrical Gangrene and Some Remarks upon the Disease.* The patient was an ill-nourished woman of forty years, who had suffered from rheumatic fever, said to have been followed by typhoid, eighteen years before the present disorder appeared, smallpox nine years before, and general dropsy two years before. She had also, about this time, several attacks of numbness and coldness of both hands, and upon one occasion the fingers became purple and continued so for about an hour, this was repeated for several days, at the same time she passed dark blood-coloured urine (intermittent hæmatinuria). Subsequently the toes became affected like the fingers, but after a month's treatment she became better, and was free for a whole year from these attacks of local syncope. She next had an attack in hot weather during the month of July, which began with a convulsion, and ten days later both legs above the ankles became suddenly of a livid blue colour; the disorder was attended by an aching pain, the parts presented a bruised appearance, and they were a trifle swelled. A small

amount of albuminuria existed, but it is not stated whether an excess of sugar was present. The patches of blood-stasis subsequently became gangrenous, and the over-lying cuticle elevated by a large amount of blood-stained serum, which was so offensive as to require charcoal poultices. Under good nursing, and liberal diet and tonics she recovered, the ulcers not finally healing until five months after the onset of the disorder. During this period transitory local stasis of the circulation also appeared in the upper extremities, but did not cause gangrene as in the lower. The general symptoms, except the pain, were almost *nil*, and only a very slight increase in pulse and temperature occurred.

In these cases it is not uncommon to meet with anæmic cardiac murmurs due to an effect upon the vaso-motor nerves by an exaggeration of the excito-motor function of the spinal cord, according to Raynaud[1] (who calls the disease juvenile gangrene to distinguish it from the senile form).

A very good *résumé* of recorded cases of this singular disorder is appended to the paper, instances of which have been reported in this country by Dr. J. C. Warren[2] and by Dr. Chas. K. Mills.[3]

In a clinical paper on *Diseases of the Nervous System* Dr. Samuel Gee contributes reports of cases of spastic paraplegia in infancy and adult age; spastic diplegia; sclerosis of encephalon in inherited syphilis; paralysis due to compression of the arm; traumatic myelitis followed by muscular atrophy and spastic rigidity; motor ataxia of legs, with spasm of the orbicularis oris; teichopsia; and infantile spinal paralysis, which are models of terseness, and scarcely admit of condensation. The notes upon spastic paraplegia in infants are continued from the Reports for 1877, the present paper containing four more cases; no observation of the state of the genital organs as regards phimosis, etc., is communicated; chloroform usually overcame the rigidity for a time. One case, of an adult man, is also reported, which is assumed to be an illustration of the spasmodic spinal paralysis of Erb, but the sudden onset, and the subsequent slow course of the malady, would suggest meningeal hemorrhage as a possible explanation of the symptoms. In the case of spastic diplegia, sclerosis of the whole encephalon was detected after death; the patient was a girl eleven years old, and had been subject to a chronic otorrhœa following scarlatina. A microscopic examination of the brain showed atrophy of nerve-cells, but no obvious increase of neuralgia, the gray matter was infiltrated by leucocytes, and the brain was small and felt unduly hard. Another case of cerebral sclerosis is reported with the autopsy, in a girl ten years old, suffering with inherited syphilis. The case of teichopsia, or transient hemiopsia, occurred in a man of literary pursuits, and was apparently connected with overwork. The notes are by the patient, and form an interesting contribution to this unusual form of disorder. The note in conclusion upon infantile spinal paralysis, states that Sir Walter Scott's lameness was undoubtedly attributable to this form of disease, his attack occurring in 1774, or before Underwood brought out his work which is said to contain the earliest description of infantile paralysis.

In a separate paper on *Purpura in Chronic Nephritis*, Dr. Gee furnishes the clinical notes of three cases of purpuric spots with intermittent hæmatinuria, and slight albuminuria that appear in their etiology and

[1] Archiv. Gén. de Méd. 1874, p. 5.
[2] Boston Med. and Surg. Journ., Jan. 16, 1879.
[3] American Journal of Medical Sciences, October, 1878.

clinical features to be closely related with the case reported by Dr. Southey, already referred to.

Dr. J. WICKHAM LEGG contributes the notes of a *Case of Delirium Tremens complicated with Jaundice*, which from the clinical history appears to be rather one of jaundice accompanied by delirium, occurring in a man of intemperate habits. "He had then attacks of jaundice, all of which ran the following course: First, vomiting and diarrhœa of greater or less intensity, for a few days; then the appearance of jaundice; after the jaundice had been established some hours, great pain in the right hypochondrium and belly came on; then, commonly after an interval of some days, delirium showed itself, delirium which had all the characters of that commonly set down to excess in spirits. After a few days of this delirium tremens, the nervous symptoms ceased, leaving the jaundice, however, to last for several weeks longer, at the end of which time the man regained his accustomed health." Three months after his last discharge from the hospital, however, he was still jaundiced, and the liver could be felt midway between the ribs and umbilicus. There was no albuminuria, and no fever. It would have been of great interest had the patient died during one of these attacks to have seen whether anything like the characteristic lesions of *icterus gravis* could have been found, as they have been met with in other fatal cases of alcohol poisoning.

In a continuation of a paper in last year's reports, Dr. VINCENT HARRIS offers some *Remarks on Angina Pectoris*, in which the pathology is especially considered. The views of a number of authorities are given, and the writer, without definitely declaring the question settled, evidently favours the view that the dilatation of the fatty heart is a principal cause, the pain being reflex from irritation of the cardiac nerves, radiating in severe cases through the connection of the cardiac plexus with the spinal nerves to the brachial and cervical plexuses.

In a contribution *On the Present State of our Knowledge in Regard to Ferments*, Mr. D'ARCY POWER gives a brief sketch of the present theories concerning the ferment process, and reviews *seriatim* the principal varieties belonging to the two great classes, morphological and non-morphological. To the latter alone does the term ferment properly belong. True ferments have neither shape nor form, and can be detected only by their results; they have no power of reproduction, do not increase in bulk during fermentation, and are in every case the product of secreting cells. The morphological or formed ferments, on the contrary, are of a vegetable nature, and their power is conterminous with their life, whilst it is arrested or destroyed by a variety of reagents which have no effect upon soluble ferments. It is a suggestive fact that Claude Bernard and Kühne succeeded in obtaining, in some cases at least, a non-morphological ferment from a ferment of the morphological group, which led Bernard in his last work to deny that vegetation was anything more than the indirect cause even of saccharine fermentation.

Some Cases of Intracranial Syphilis by J. A. ORMEROD, M.B., includes the notes of three cases of obvious cerebral disorder, gradual hemiplegia, and in two, ophthalmoscopic evidences of syphilis, occurring in adults prior to middle age, in all of which great improvement took place under the mixed treatment. In some introductory remarks it is held that syphilis is a common cause of nervous disease, and that disastrous results may be averted by prompt recognition and proper treatment. Syphilis of the brain is usually meningeal, sometimes affecting the bones but not

the cortex nor the nerve trunks excepting secondarily; or it may occur as a growth or deposit in the coats of the cerebral arteries between the endothelium and membrana fenestrata, encroaching upon the calibre of the vessels and forming thrombosis. Where direct evidence of syphilis is wanting, diagnosis by exclusion is left, which may be confirmed by anti-syphilitic treatment. Epileptiform attacks commencing in middle life are to be viewed with suspicion. "A state of obfuscation and somnolence not amounting to coma, but lasting for weeks," Dr. Buzzard says suggests syphilitic cerebral thrombosis. The ophthalmoscopic appearances of retino-choroiditis, and neuro-retinitis will often aid the diagnosis.

The *Changes in the Optic Disk Associated with Spinal Concussion* is the title of a paper by W. Bruce Clark, M.B., who reports several cases in which intense hyperæmia of the disk was detected which disappeared *pari passu* with the other symptoms. He believes this test to be valuable in detecting malingerers after railroad accidents.

Mr. Walter H. Jessop reports a typical *Case of Hystero-epilepsy with Hemianæsthesia and Chorea*, in a girl of 20 years, in which ovarian compression and metallo-therapy were alike ineffectual in relieving the symptoms. The attacks first appeared after scarlet fever, which evidently damaged the nervous system, although unaccompanied by nephritic symptoms. The condition of the eyes was interesting, as the changes noticed in them remained permanent notwithstanding the return of sensation in the other parts. Amaurosis in the left eye was nearly complete, and did not alter for at least six months, though no cause could be found on examination to account for it. In the right eye, besides a contraction of the colour-field, there was a large central scotoma. While under observation in the hospital chorea developed which became very violent, being unaffected by large doses of chloral and bromide of potassium. Great improvement subsequently occurred from hypodermic injections of liquor sodæ arseniatis (five minims three times daily). The case was undoubtedly one of hystero-epilepsy with anæsthesia, analgesia, ischæmia, paralysis, contractures, amaurosis, and chorea.

Dr. Dyce Duckworth, in an interesting essay on *Unequivocal Gouty Disease*, reviews in order the various phenomena that may be considered a characteristic of gout; furnishing a valuable contribution to its pathology from the stand-point of clinical experience. Accepting the occasional coalescence of the two arthritic disorders in rheumatic gout, he further acknowledges a close relationship existing between them, gout in the parents favouring rheumatism in the children and *vice versâ*. Cases of gout with urate of soda deposits constitute a distinct clinical group. The nervous element must always be taken into consideration in separating gout from rheumatism; and this nervous erethism makes the gouty patient especially irritable, and unable to withstand the pain which seems disproportionate to the amount of the arthritis. Desquamation does not usually occur in rheumatism; peri- and endo-cardial complications are almost unknown in gout. The effect upon the kidney, upon the special senses, and the marked disturbance of the liver and respiratory tract, are well known, while gouty urinary troubles, including urethral stricture, are as specific as the other changes referred to. The author believes that in women, too little heed has been paid to gouty affections of the uterus. The view of the author that gout is very distinctly a neurosis has been elsewhere defended. It is commonly known that the nervous manifestations of the gouty diathesis are not rare, and among which neuralgia

(occipital and chiefly right-sided) stands at the fore-front, while local paralysis or spasms, and vertigo, headaches, and glycosuria are frequent, gouty apoplexy or mania more rare. A pregnant observation is contained in the following sentence: "the whole of a gouty attack may, I believe, expend itself sometimes in a frightful attack of rage and irascibility," as it affects the responsibility of gouty subjects for acts of violence or possibly of crime.

Drs. T. LAUDER BRUNTON and THEODORE CASH contribute a physiological note upon the *Explanation of Stannius's Experiment, and on the Action of Strychnia upon the Heart.* The still-stand of the heart after ligature of the sinus venosus, the experimenters believe to be attributable to an interference with the passage of the normal reflex stimulation arising in the afferent nerves of the cavities or walls of the heart. The injection of strychnia into the ventricles restored temporarily the pulsations, showing that strychnia is a cardiac stimulant. The action of this drug in prolonged overwork and mental strain is undoubtedly great. "Small doses of strychnia or nux vomica restore both mental and physical power, and give a sense of well-being in a manner in which, so far as our experience goes, nothing else will."

Dr. BRUNTON also furnishes a paper on the *Cause of the Non-precipitation of Oxide of Copper in testing Certain Cases of Diabetic Urine.* Having noticed that in a case of diabetes on applying the usual test the Pavy solution was decolorized by heat, but no precipitate occurred, he subsequently determined by a series of experiments that the agent which had the power of keeping the copper in solution was indican or some agent closely allied to it, since such urines gave a purple coloration with cold nitric acid. Creatinine also exerts a similar effect in healthy urine. In typical diabetic cases, these constituents are deficient, and Brunton concludes that "such cases must therefore, in addition to the increased formation of sugar, be complicated with another pathological process, which consists in the non-formation or non-excretion of these substances." Where the precipitate is not obtained in diabetic cases it usually indicates a slow course of the disease, and a more favourable prognosis.

The *Notes of Post-mortem Examinations of Cases of Hemorrhage within the Cranium* made by Dr. NORMAN MOORE, are contained in a paper which includes the autopsies of fourteen cases, ten in the basal ganglia, two in the pons, and two in the surface of the hemispheres. Without attempting an extended analysis, the cases show conclusively the close relation existing between hypertrophy of the heart and cerebral hemorrhage; for in every case the heart was larger than natural; in ten the apoplexy was associated with chronic interstitial nephritis.

Dr. WICKHAM LEGG in a paper *On Certain Abdominal Tumours* furnishes some very interesting cases, two of which are instances of hardening of the linea alba and umbilicus with post-mortem examinations. Although this condition is frequently associated with malignant disease of the viscera, yet, since it has also been noticed in tubercular peritonitis, it cannot be looked upon as pathognomonic. Cases of aortic aneurism, perityphlitis complicated with thrombosis of the femoral vein, and several of renal tumours of different kinds, are also reported in this valuable paper.

A clinical essay on *Perimetritis and Parametritis*, by WALTER S. A. GRIFFITH, concludes the medical papers in this volume of Reports. Cases illustrating the different varieties of perimetritis and parametritis are

reported, and some analytical tables are appended, showing the seat of lesion, assigned cause, result, age of patient, how long married, births, miscarriages, etc., which make it of more than usual interest and value.

We notice as a new feature of this volume, on page 66, a table showing the effects of season on the frequency and fatality of some of the principal diseases, which, in deference to the growing importance of the question of the effects of meteorological conditions on disease, we hope will be continued and extended in some directions so as to show the influence of barometric changes upon constitutional disorders and the effects of surgical operations. F. W.

ART. XXVI.—*On the Antagonism between Medicines, and between Remedies and Diseases. Being the Cartwright Lectures for the year* 1880. By ROBERTS BARTHOLOW, M.A., M.D., LL.D., Professor of Materia Medica and General Therapeutics in Jefferson Medical College, Philadelphia, etc. etc. Pp. 122. New York: D. Appleton & Co., 1881.

THIS neatly printed volume contains the six lectures delivered by Professor Bartholow, last winter, in New York, in accordance with the Cartwright bequest to the Alumni Association of the College of Physicians and Surgeons of that city. They constitute a highly appropriate topic for the initial lectures under the generous bequest of the founder,—a bequest as honourable to the benefactor, as it is rare in the experience of the medical profession.

After a rapid, though sufficiently comprehensive history of the subject of the antagonism of remedies from the period of Magendie and Bernard, the author illustrates what he terms the "physical basis of the principle" by appropriate examples taken from the domain of physics, and then takes up for his first consideration the antagonism between *opium* and *belladonna*, very properly stating that this antagonism is supported by clinical rather than by experimental observation. We may remark, in passing, that the method adopted by the author, as indeed by all experimenters in this line of research, is to observe the effects of the various antagonistic remedies upon the lower animals, and then confirm the results, so far as may be practicable, by clinical experience on man. But in these investigations, the results of which have shed so much light upon modern therapeutics, one fact should not be overlooked, namely, that we are not *always* authorized from experiments upon the lower animals to predicate results upon the human subject; and this simply from the circumstance that remedial agents do not always produce similar effects upon the two systems. Witness, for example, the extreme tolerance of the rabbit and dog for atropia, and of birds for morphia. But with this caution, we may pursue this interesting investigation, and be grateful for the amount of practical benefit derived therefrom.

To revert to the antagonism between opium and belladonna, the author has collected 120 cases where these remedies were employed antagonistically on man, of which 12.5 per cent. only were failures. Of course, due allowance must be made for the influence of accessory measures, such as emetics, coffee, galvanism, etc.; and, as he justly remarks, the non-successful cases should be particularly studied, since most of them show satis-

factory reasons for the failure of the remedy. Our own experience fully confirms that of the author, that "the clinical evidence is conclusive" on the antagonizing action of these two substances. Unfortunately perhaps for the positive establishment of the theory, the results of experiments upon animals have not appeared to be entirely in accord with clinical observations, although they have been attended with undoubted benefit in demonstrating the *mode* of antagonism upon them, as for example, in the diversity of their action on the brain, lungs, heart, pupil, stomach, and skin. A very timely caution is given, that in poisoning by either of these drugs, the antagonistic should be used only in small doses, frequently repeated, and that "the condition of the respiration and circulation be taken as guides rather than the state of the pupil."

The antagonism next examined is that between *atropia* and *physostigmia* (eserine). The researches of Prof. Frazer, of Edinburgh, on this subject are familiar to our readers. The author claims a priority in his own experiments made in 1868, a year before the publication of Frazer's investigations. His opinion is that these agents are physiologically antagonistic in the lungs, heart, brain, pupil and sympathetic; but he agrees with Frazer that they are not therapeutically so.

The very diverse effects of *atropia* and *pilocarpin* on the human system afford an admirable illustration of the antagonism of remedies. The author adduces an instance of this in his own person. Having injected subcutaneously one-fourth of a grain of pilocarpin, and experienced profuse salivation and general perspiration in a few minutes, the injection of the one-hundredth of a grain of atropia produced within five minutes a complete reaction, arresting the sweating, and restoring the natural warmth and vigour of the body.

The antagonism between *atropia* and *muscarin* (from amanita muscaria) appears to be physiologically complete on the brain, heart, lungs, eye, and the secretions generally.

Between *atropia* and *aconitia* there seems to be a decided antagonism, the one being a stimulant to the respiratory and cardiac centres, while the other is a depressant to the same. The researches of Dr. J. Milner Fothergill fully confirm this doctrine. An interesting fact is adverted to by the author that atropia may very properly be regarded as the type of the whole class of mydriatics, including hyoscyamia, daturia, and duboisia; and further, that they all possess similar, if not identical, antagonistic powers over the substances above mentioned. The chemical identity of several of them has already been clearly established.

Section IV. discusses the antagonism between *chloral hydrate* and *strychnia*, *chloral* and *picrotoxine*, *chloral* and *atropia*, *opium* and *veratrum viride*, *opium* and *gelsemium*, *opium* and *aconitia*, together with *morphia* subcutaneously and *chloroform* by inhalation. As regards the controlling power of chloral hydrate in strychnia poisoning, the author has collected seven cases which undoubtedly establish this fact. The converse, however, is not so well made out, namely, that strychnia is antidotal to chloral poisoning. This difference is explicable by the different physiological impression exerted by these two substances; chloral acts primarily upon the brain, producing stupor and coma, and then upon the spinal cord; it is also a cardiac and respiratory depressant; its impression is similar in many respects to that of opium. Strychnia, while producing no effect upon the brain, is a direct spinal excitant, increasing the reflex activity, stimulating the cardiac and respiratory ganglia, but having no power to remove the coma and other brain troubles.

The antagonism of *chloral* and *atropia* the author believes was first studied by himself, and his results published in 1875. Their opposing effects are more obvious on the circulation and respiration than upon the brain and spinal cord. To a certain extent, their antagonistic powers resemble those of morphia and atropia.

The author refers to some of his own experiments to test the antagonism between *opium* and the so-called cardiac and respiratory depressants, *veratrum viride* and *gelsemium*. The therapeutic opposition of these agents has been verified in several well-marked cases. A striking instance is mentioned of the curative effect of morphia, hypodermically administered, in arresting the poisonous operation of a large dose of gelsemium accidentally swallowed.

The advantages of *mixed anæsthesia* receive a passing notice by the author, who emphatically endorses the propriety of employing morphia subcutaneously at the time of administering chloroform and other anæsthetics by inhalation, as was originally recommended by Bernard and Nussbaum.

The antagonism of *strychnia* and *aconitia*, of *strychnia* and *nitrite of amyl*, and of *aconitia* and *digitalin*, offers a wide and tempting field of investigation, which has been diligently cultivated by the author and other able experimenters. Our limits, however, only allow us this passing notice.

The two last lectures discuss the very interesting subject of "the antagonism between remedies and diseases," which is in fact the basis of our therapeutics. It was an easy and natural induction to apply the principle of the antagonism between different remedies to the idea of antagonizing diseases by certain remedial agents. Thus, for example, the original observations of Magendie on the effects of strychnia upon the spinal cord, producing muscular contractions, led this experimenter, along with Fouquier, to employ this substance as a remedy in paralysis, and all succeeding clinical experience has abundantly demonstrated its value in this disorder. In a similar manner, excessive muscular action, as in spasm, is found to be controlled by the so-called *paralysers*, such as woorara, chloral, potassium bromide, nitrite of amyl, etc. Under this head we are reminded of the beneficial therapeutic effects of the above mentioned remedies in spasmodic neuroses, such as chorea, whooping-cough, laryngismus stridulus, angina pectoris, etc.

As regards the proper antagonists to *pain*, the anodynes, of course occupy the natural position. The sensation of pain, as is well understood, may be relieved either by destroying consciousness through a direct action on the brain, or by preventing the transmission of impressions to the brain through the nerve cords. Anæsthetics do their work in the former case; aconite is an illustration of the latter action, as when, for example, it is applied for the relief of peripheral neuralgia. We quite agree with the author that, as a rule, the best and most efficient means of relieving pain is by the subcutaneous injection of a mixture of morphia and atropia,—a mode of medication which we have been in the habit of employing for many years. We may not now follow the author further in his illustrations to show the antagonism between our various remedies and the diseases we are called upon to combat, except to give a passing notice to the remarkable influence of ergot (especially the hypodermic injection of ergotine) in hemorrhages, aneurism, and in certain kinds of uterine fibroids; the remedial effect in these cases being doubtless due to the diminishing of the calibre of the peripheral vessels.

The same principle of antagonism is also shown to be equally applicable to general or constitutional disease, as well as to local disorders. Inflammation and fever are especially noticed as conspicuous examples. To meet the earlier indications of inflammation—the initial congestion and the corpuscular changes of the blood, the two remedies quinia and morphia seem to be specially indicated. Other agents of lesser importance are digitalis, aconite, and veratrum viride. In the second stage of inflammation, characterized by exudation, the appropriate remedies would appear to be chloral and the alkalies, especially ammonia in the form of carbonate; still later in the progress of the disease, quinia and digitalis are found to be serviceable.

In the treatment of *fever* on the principle of antagonism, the main point, of course, is to reduce the heat, whatever theories may be held in regard to its mode of production. Two methods would here naturally suggest themselves for reducing the temperature: first, to diminish or arrest the production of heat; and secondly, to aid in its dispersion. To meet the first object, remedies termed *antipyretics* are employed, such as quinia, salicylic acid, resorcin, aconite, digitalis, and veratrum viride. The author assigns the foremost rank to quinia as an antipyretic; next comes salicylic acid. Both of these remedies require to be given in large doses in order to produce the desired effect. To accomplish the dispersion of the heat in fever, the all-important remedy is *cold*, which, of course, acts as a direct antagonist. The beneficial therapeutic application of cold is witnessed in all cases of hyperpyrexia, notably in sunstroke. Its value in typhoid fever has, as we all know, been greatly extolled within the last few years.

There are some other points in Professor Bartholow's book of considerable interest, which our limited space will not permit us to notice. The subject that he has selected for his inaugural lectures is a most interesting and important one to the medical practitioner, and one which he has handled with considerable skill and success. We deem his treatise a truly valuable one for our profession. J. J. R.

ART. XXVII.—*Lectures upon Diseases of the Rectum and the Surgery of the Lower Bowel.* Delivered at the Bellevue Hospital Medical College. By H. W. VAN BUREN, M.D., LL.D. (Yalen.), Professor of the Principles and Practice of Surgery in the Bellevue Hospital Medical College, etc. 8vo. pp. 412. New York: D. Appleton & Co., 1881.

To those who read and appreciated this book in its former and more unpretending shape, the appearance of a new and enlarged edition will be a welcome event. The changes introduced in the text are chiefly additions, embodying the further experience of the author, as well as the contributions of others to the literature of the subject, and bringing the work fully up to the science of the day. The terse, clear, and practical style, and the accuracy of description, which marked the former edition, are to be noted also in this; and these features will commend it to students and young practitioners, as well as to those of larger experience—to all, indeed, who have not yet outlived their capacity to learn.

We should be glad to make the present notice as full and complete as

the merits of the book and the importance of the theme would warrant; but the space available will only allow of the mention of a few points in detail.

As a matter of course, the subject of hemorrhoids is a very prominent one, and is discussed at much length. For the external, the treatment advised is excision; for the internal, the ligature, which is said to be "the safest, surest, and most manageable procedure" (p. 40). The actual cautery, as recommended by Mr. Henry Smith of London, receives much stronger indorsement than in the former edition; being placed "very nearly on a par with the ligature" (p. 41).

We regret to see that the écraseur is dismissed, as in the former edition, with a brief and unfavourable mention. Our own experience with this instrument has been such as to lead us to place a high value upon it; we have never seen bleeding of any moment follow its use, while the ligature is confessedly not absolutely free from danger in this respect. In one class of cases—those in which the tumours are partly internal and partly external—the écraseur has in our hands proved especially valuable.

Dr. Van Buren advises, and we agree with him, the forcible dilatation of the sphincter ani before operations for hemorrhoids. It can hardly be questioned that this lessens, if it does not wholly set aside, the danger of strangury after these procedures.

Prolapse of the rectum is the subject of a particularly valuable lecture, full of practical good sense; and the same may be said of the topic next discussed—polypi and benign tumours.

The descriptions of abscess near the anus, and of fistula, are very good. Especially in regard to the propriety of operative interference when the latter condition occurs as a concomitant of pulmonary phthisis, the views advanced seem to us thoroughly sound. We cannot but think, however, that the elastic ligature is a remedy of much wider application, in all classes of cases of fistula, than is here allowed. Nor is the iodine treatment, sometimes so admirably successful, accorded sufficient value.

On one subject our author seems to have found reason to change his views, namely, in regard to syphilis as a cause of rectal stricture; for whereas he formerly discredited it *in toto*, he now accords it his free belief, as the result of his clinical studies. Thus he says: "The more I study this subject clinically, the more I am disposed to regard syphilis as a pregnant cause of rectal stricture. In the best and most recent collection of cases of benign stricture, about half are recorded as occurring in syphilitic subjects (Allingham; Mason). Without being conclusive, this is certainly significant evidence. On the Continent, and especially in England, professional opinion is almost unanimous as to the very considerable frequency of syphilis as a cause of this disease" (pp. 269, 270). We think the majority of American hospital surgeons would be willing to endorse this view.

The whole subject of benign stricture of the rectum, pathology, diagnosis, prognosis, and treatment, is very thoroughly considered; and so is that particularly gloomy one, for surgeon as well as for patient—cancer. In regard to both forms of disease, the subjects of colotomy and excision of the rectum are fully and practically discussed; we have only to suggest that their exact relation, as suited each to certain classes of cases, might have been more explicitly stated. Perhaps, however, further experience is needed to establish this on a definite basis.

Taking it as a whole, we regard this volume of lectures as more worthy

of being called a "treatise" than are many books to which that title is given by their authors. It is sure to find a wide and attentive circle of readers.

We cannot conclude this brief notice without mentioning that the present edition contains well-selected illustrations from various sources, and an index covering nine pages, additions which will be at once appreciated. The mechanical execution of the book is highly creditable. J. H. P.

ART. XXVIII.—*The Diseases of Children; a Practical and Systematic Work for Practitioners and Students.* By WILLIAM HENRY DAY, M.D., M.R.C.P. Lond., Physician to Samaritan Hospital for Women and Children. Second edition. Rewritten and much enlarged. 8vo. pp. 728. Philadelphia: Presley Blakiston, 1881.

THE student or practitioner of medicine who desires to inform himself of the cause, diagnosis, and treatment of children's diseases has certainly ample opportunity to gratify this *penchant*, if the size and number of text-books are to be taken into consideration. Meadows's Tanner has 507 pages, Meigs and Pepper over 1000 pages, J. Lewis Smith 747 pages, Vogel 593 pages, and the book before us 728 pages; all of them capital works, containing much valuable information, and capable of transforming the ignorant into an inexhaustible mine of precious knowledge. But, alas! knowledge thus acquired, without an opportunity to digest it—to sift the bright coal from the cinders, is a dead weight, and like the book itself, when on the library shelf, ornaments the bearer without adding much except its own ponderosity. A cyclopædia cannot be a text-book, nor should the endeavour be made to make a text-book a cyclopædia; a good book is not necessarily a large book, and the originalities of authors are often so sandwiched between the layers of padding that they lose the force of the very object for which the book was written. If some one would write a thorough description of scarlatina, rubeola, and kindred affections, and then let all the writers of the future simply refer to them, what a blessing it would confer to the readers of the day to come! The rash of scarlatina will, in all probability, remain forever the same, and it needs not the constant enumeration of its peculiarities to make it better known. Dr. Day follows the usual arrangement of authors that have preceded him, giving us fifty-three chapters, including an introduction upon the study, special characteristics, of children's diseases, with hints as to the management and treatment of children, and their constitutional and inherited diseases. He tells us that "the children of the present day are reared differently and fed differently from those half a century ago, and as a consequence the power of disease is greatly modified by such changes," but, alas! such modifications as must result from the change in habits of the mothers of the present time, whose erratic propensities led him to tell us "that late hours lead to fatigue, to excitement, and to stimulating and improper diet, which are sure means of causing them to bear an unhealthy offspring, are certainly not to be considered as the improvements of our century."

His advice is good, but unfortunately it only reaches those who, like himself, are but too well aware already of its importance. He shows for-

cibly that early errors and indiscretions in diet, and care and neglect of her duties on the part of the mother or nurse are a cause, in part, of the diatheses; and that this is the groundwork to begin our treatment of most of the children's diseases, is well brought out in good forcible English, and should be read by all who engage in the general practice of medicine.

From the onset there seems to be the usual want of distinction made between the *disorders* and *diseases* of childhood, and also the difference between those of *infants* and those of children. A disorder, which is simply a transitory functional disturbance, requires different treatment and different management from a disease which represents some pathological change; the one may lead to or involve the other, but every successful practitioner recognizes in them distinct influences at work.

Although rules are laid down by following which it would seem scarcely possible for an infant to do otherwise than live, and we might go so far as to say, on account of the importance attached to them, upon their observance life always hangs, Dr. Day says, "it cannot be denied that some children grow up and thrive even under any system that fancy or caprice of the mother may dictate"—equally true in this country as in England.

The author confirms our own views as to the value of condensed milk. He seems not to exaggerate its value, and we daily see in this country such good results from its use in our large cities during the "heated term" that the gradually accumulating evidence, where so much prejudice previously existed, gives additional force to his strong argument. Milk he regards as *per se* the food for children,—a food in health, a remedy in disease. He objects, of course, to farinaceous food for *infants*, and he regards it justly as the cause of many of the disorders of early life.

Chapter IV. is devoted to the consideration of *Debility*, "a functional impairment, atony, or weakness, or preternatural slowness in the performance or working of the vital processes, leading, when neglected or overlooked, to debility (and it may be to structural change) in one or more of the great central organs of life or tissues of the body." A description which every student should be required to memorize, as it covers the ground of our whole pathology.

This chapter is original, and therefore we may be allowed to call particular attention to it. "These cases of pure and simple debility, when neglected, cause chorea, epilepsy, convulsions, paralysis, etc., and finally lead to those changes in the blood which originate anæmia, tuberculosis, and every form of diathesis that lowers health and provokes disease;" in fact, we may add, it leads to *all* the affections of childhood and adult life, except perhaps, if we may be allowed to suggest an exception, the contagious diseases! Some of us unbelievers do not in so sweeping a manner attribute so much evil to what has been so long taught us as usually a result or a symptom. But the author himself (before noting this), says in treatment "that unless marked indications exist, I entirely disapprove of the pernicious practice of flying to tonics, alteratives, and aperients, as the case may be." Sound advice; but as it is the recognized *one* treatment, as far as the tonics are concerned, that will overcome the great universal cause of disease in his acceptation, it seems like pulling the planks from under him, in our humble view! There is much of interest in this chapter, as it brings us in contact with the author's views of treatment, and notwithstanding his positive assertions to the contrary, as above, his advice in this part is sound; he takes it all back and endorses the *tonic*.

Chapter VI. deals with that famous disease without which coroner's

juries would sadly be at a loss—that great "what is it?" of children's practice, that has, no doubt, in death certificates covered many a multitude of sins of ignorance and omission,—*marasmus*. Its definition is that of *atrophy*, or a "decrease in size of a tissue or of the whole body with consequent impairment of functions." "It is not the same process as degeneration, although degeneration is always sooner or later accompanied by atrophy." "It has its origin in defective nutrition, and is rather to be regarded as a state of extreme debility (again!) and lowered vitality than as a specific and independent affection." As regards its cause, we may again quote: "as to some other causes," having mentioned "whatever occasions any great waste of nutritive material," he tells us "the most frequent are any circumstances that bring about defective nutrition in infants and very young children." All this is very true, but throws no additional light upon a subject which needs the brightest reflector, and which relates to a disease that is so obviously dependent upon some deeply-seated constitutional fault or taint, as not to merit the careless throwing over of it into the already overcrowded pigeon-hole labelled "Debility."

There is too much *wording* in this part of the book in purposeless definitions, and too much of the sweeping away of old time-worn cobwebs by broad and meaningless assertions.

From the last chapter which deals with infants, he proceeds to study the fevers of childhood, and second in the list we find typhoid. Dr. Day tells us his views as follows:—

"I must disavow at once any belief in infantile remittents as caused by a separate and distinct poison, or that the disease differs in its nature or causes from that of typhoid. I cannot conceive few greater blunders in practical medicine than to consider this a separate and distinct affection, not following the same course as typhoid, and not leading to the same complications. To me it seems, however, that there is a condition to which this term may be applied without causing confusion; it should be limited to the mildest cases which usually run a quick course, and do not develop into the severe and unmistakable typhoid."

With such a view (heresy!) there is no wonder that quinia is dismissed with the remark that "quinia with phosphoric acid is an excellent measure," and a prescription in foot-note. Though, when we come to reflect, we are surprised that he has not found quinia a specific for typhus.

This chapter we consider confusing, because by introducing into it the differential diagnosis of typhoid, acute tuberculosis, cerebral meningitis, dentition, and typhus, the matter is made so difficult of decision, from the great variety of symptoms that seem to be battling for superiority, as to inevitably result in the necessity of a *post-mortem* diagnosis. We have always believed and taught that a diagnosis made by analysis is as difficult as a Chinese puzzle; that it is the grouping of symptoms in their sequence, a diagnosis by synthesis that lifts the veil of obscurity—taking a "bird's-eye" view of the field, and noting and grouping the prominent symptoms.

The malarial fevers of children which *we* in this land recognize as so important, receive no mention; probably as remittent fevers have been attached to typhoid as its mildest form, and we know that the intermittents are but degrees of the same poisoning as remittent, the generic term typhoid, of Dr. Day, presupposes malarial origin, but if this be the author's view, he is certainly "off" in the treatment. We hope if a third edition is necessary, that Dr. Day will place himself right in this, for it is necessary if he wishes his work to be of use here or even in India.

We would call attention to the chapter on *röthela*, which treats of the subject well and gives a clear idea of the characters that distinguish this disease from scarlatina and measles. Its remarkable features are the short premonitory fever, which seldom lasts over twenty-four hours.

"Shivering and febrile disturbance, headache, pain in the limbs, sore throat, redness of the pharynx and tonsils, and in some instances nausea and vomiting." "In addition to these symptoms, the respiratory organs are somewhat slightly affected, and there is catarrh, short cough, sneezing, and coryza." "The eruption first appears on the thorax and arms, but often on the face and neck; it is characterized by small, red, elevated patches, and distinct and minute round papules."

He does not mention the enlargement of the glands, especially the post-cervical glands, which has been so frequently noticed in the recent epidemic in this city, nor does he lay stress on the violent backache that has often puzzled us by its similarity to that of varioloid. Of course these may be simply epidemic modifications, though we are inclined to think that the extreme watery condition of the eyes, with sore throat and severe febrile symptoms, coming on with the suddenness of scarlatina, is pathognomic.

The treatment of the exanthemata is thorough and clear, in fact we are well pleased with the common sense view the author takes, so different from most of the English writers, especially as regards diet. We note fewer of the quasi-patent-medicine style of food and drugs recommended; the *mistura salina* (?) of Guy's Pharmacopœia is used for diarrhœa in teething, upon the word of Dr. Pavy.

In Chapter XV. we return once more to the babies, and engage in the study of diarrhœa, and the author's sound views upon its treatment made us almost wish he had published this chapter separately, that it might have had a chance of wider reading. He is a believer in castor oil, and is opposed to the deadly chalk mixture; in fact, he strikes the keynote in the following:—

"As a rule astringents are objectionable in the early stage of diarrhœa, which may continue in spite of them, unless other precautions are taken. If the motions contain mucus and are slimy, and there is any escape of blood or redness about the anus, chalk mixture, catechu, acids, and bismuth will be of no service, but in their stead the remedies we have pointed out, especially castor oil paste[?] and alkalies, with an alterative or sedative, as the case may appear to warrant."

In choleraic diarrhœa he recommends morphia, brandy, and sulphuric acid, which we know by experience to be of great value.

Although the writer tells us that diphtheria "bears an affinity to the exanthemata in the fact that it chiefly attacks the young, and that it is a contagious and epidemic disorder characterized by a specific inflammation," etc., we still find it as usual placed with the diseases of the respiratory apparatus; if such be the proper place for this disease, the exanthemata should be associated with the chapter on skin disease. If this affection and whooping cough were elevated to their proper position in the work, where the author states they belong, it would greatly simplify the special points laid down as indications for their treatment.

Our notice has reached such length that it is impossible for us to do justice to the best parts of the book, which we have not noticed. We have called attention to only some of the weaker points, most of which are matters that relate rather to mothers' guides than to scientific text-books.

On the whole, we must confess we are pleased with this book, and can heartily recommend it,—a recommendation which it does not appear to need, as it has already reached its second edition. The article on the true *diseases* of children, those of the pulmonary, circulatory, and renal apparatus, and the nervous system, are in many parts exhaustive and well written, least so probably are those connected with brain and nerve disease. The writing is clear and forcible and to the point, and were it not for the wearisome description of so much already well-known matter, the practitioner, even be he one who has been through the advanced course of the study of medicine, would find in its reading pleasure and profit.

For this country, we do not think it could ever form the useful text-book, or rank as high as Meigs and Pepper, nor can we for a moment place it beside the other thoroughly American, and masterly work, that of Dr. J. Lewis Smith. As an aid to diagnosis, it is inferior to Meadows's Tanner, but as a guide to treatment it leads the works of the English school. The author has attached some useful formulæ, but we note the absence of decigrammes and centigrammes, and only find our old time comprehensible prescriptions, for which we again thank him. J. M. K.

ART. XXIX.—*Transactions of the American Ophthalmological Society. Sixteenth Annual Meeting.* 8vo. pp. 173. New York, 1880.

THE first paper is by Dr. DAVID WEBSTER, of New York, *On sympathetic Inflammation following Operations for Cataract*, in which he reports eleven cases from various sources, with the following summary:—

"In four cases both eyes were lost. In one case the eye causing the sympathetic inflammation was lost and the sympathetically inflamed eye was badly damaged. In one case the eye causing the sympathetic inflammation was lost, and the sympathetically inflamed eye recovered in good condition. In one case the eye causing sympathetic inflammation retained useful sight, and the sympathetically inflamed eye was afterwards operated on, and gave promise of a good recovery, when the patient died, and a knowledge of what the ultimate result would have been was prevented. In two cases both eyes recovered in good condition. In one case the eye sympathetically inflamed was lost, while the eye causing the sympathetic inflammation retained good vision."

Several other members of the society spoke of cases that had occurred in their practice or come to their notice.

Dr. CHAS. S. BULL, of New York, presented a *Contribution to the Pathology and Treatment of Vascular Tumours of the Eyelids*, with reports of two cases, in one of which microscopical examination showed that the tumour had been a dermoid cyst transformed into an angioma. He strongly insists upon the superiority of excision over other methods of treatment for the ordinary vascular tumours met with in the lids.

Dr. F. B. LORING, of Washington, describes a *Peculiar Anatomical Development of one of the Central Arteries of the Retina.* It consisted of an annular enlargement of the lower branch of the central artery a little below the margin of the disk. There was nothing else abnormal in the fundus, and vision was not affected.

Dr. ARTHUR MATHEWSON, of Brooklyn, reports *A Case of Ectropion treated successfully by Wolfe's Method, the transplanted piece of Skin*

measuring three by one and a half inches. The deformity, for the relief of which the operation was performed, was the result of an extensive burn of the face and the forehead. The upper eyelid was completely everted and its ciliary margin drawn upward on the supra-orbital ridge. The cicatrix was so extensive that a flap could not be formed from the surrounding tissues. A piece of skin was taken from the side over the seventh rib and applied to the raw surface formed by dissecting the lid free and bringing it down in place. Two sutures only were used, and the flap was covered with a transparent plaster of gold-beaters' skin fastened at the edges with collodion, a piece of soft muslin smeared with vaseline and a compress of absorbent cotton, held in place by a bandage. The dressings were left undisturbed until the fourth day, when the transplanted piece was found in perfect coaptation and apparently united by first intention. There was slight sloughing three or four weeks after the operation, but at least two-thirds of the flap remained entire.

A case very similar to the above is reported by Dr. Lucien Howe, of Buffalo, N. Y., in a paper on *The Treatment of Ectropion by Transplantation of Skin.* The transplanted piece of skin, which measured $3\frac{1}{2}$ by $1\frac{3}{8}$ inches, was taken from the inner aspect of the forearm. To avoid delay it was dissected up by an assistant while Dr. Howe was engaged in freeing the lid. Only a small strip along the edge of the flap, two lines in breadth and four in length, was lost. There was a superficial slough over the entire surface, involving only the epithelial layer, which was immediately reproduced. The author gives a brief sketch of the history of the operation. He thinks that the flap should be made at least one-third larger than the wound to be covered. It had contracted, in his case, at the end of two months from $3\frac{1}{2}$ by $1\frac{3}{8}$ inches to $1\frac{1}{2}$ by $\frac{3}{8}$.

Dr. Albert G. Heyl, of Philadelphia, contributes a paper on *Intra-Ocular Lipoma.* He defines lipoma as the "name applied to a state of the blood characterized by the presence of free fat in the serum of the blood," and describes the ophthalmoscopic appearances and the peculiar condition of the blood in a case of diabetes mellitus, which was the subject of his paper. There was incipient cataract in each eye. The nucleus of the lens was opaque, and the cortical structure, though sufficiently clear to admit of examination of the interior of the eye, was traversed by radiating spikes of opaque lens tissue. The fundus was free from any evidence of inflammation either old or recent. The retinal arteries and retinal veins were of the same colour, which was described as light-salmon. The vessels appeared to have about twice the normal diameter. For this latter phenomenon the author suggests the following explanation: according to Jaeger, the blood-stream in the retinal vessels consists of an axial current of blood corpuscles surrounded by a peripheral current composed of the plasma of the blood, which plasma is, under ordinary circumstances, invisible in ophthalmoscopic examination, but in the case described was made visible by the presence of fat.

The blood drawn from the patient presented a peculiar appearance:—

"On pricking the finger, a drop of blood would escape, having very much the colour of a piece of pink coral, followed by a thick whitish fluid, of the colour and consistence of an oil emulsion. On examining this with a low power, 250 diameters, a few blood corpuscles could be seen upon a dim, misty background, barely discernible. Examination with a power of about 600 showed the granular nature of this background, and examination in various ways left no doubt but that it was fat in a finely divided state."

The author suggests that the interruption of the circulation resulting from occlusion with masses of fat may be connected with the causation of diabetic cataract and retinitis.

Dr. W. S. LITTLE, of Philadelphia, presented a *Tabular Report exhibiting the Position of the Axis of the Cylinder in Simple, Compound, and Mixed Astigmatism; the Myopic and Hypermetropic Forms compared; with Remarks.* He suggests a connection of the usual position of this axis, approaching the horizontal in myopic and the vertical in hypermetropic astigmatism, with the causation of the defect.

Dr. LITTLE also reports a *Case of Traumatic Paralysis of the Superior Oblique Muscle, with treatment*, and one of *Partial Paralysis of the Inferior Oblique, with treatment.* The former was the result of a fall, in which the head was struck. As there was no other paralysis, and but slight cerebral disturbance, Dr. L. considered the paralysis due to direct injury of the fourth nerve, probably by effusion. The patient was treated with iodide of potassium, and afterwards with strychnia and the Faradic current, and the diplopia was relieved by the use of prisms, gradually diminished in power as the muscle recovered its function. The first prism used was one of 20°, and the last one of 3°. The patient had finally but little inconvenience from diplopia, without a prism.

The cause of the paralysis in the inferior oblique case was not known. The diplopia was relieved by a prism of 6°.

Three *Cases of the Laceration of the Eylids* are reported by Dr. H. D. NOYES, of New York, illustrating some practical points in treatment. Dr. Noyes also reports a case of *Glioma of both Eyes; Removal; Recurrence; Death; Autopsy.* When first seen the patient was one year old, and the peculiar glistening reflex had been noticed, by the parents, in the left eye six months before. The growth was also distinctly visible in the right eye. Eighteen months afterwards the left eye was enucleated in Germany, but in a few months the disease returned in the orbit, which was soon filled by a secondary growth. This was removed as thoroughly as possible by Dr. Noyes, but a part of the mass was left at the apex. Death resulted in a few weeks from extension of the disease to the brain. The disease had advanced slowly in the other eye. Microscopical examination of the brain showed that the pia mater was the structure chiefly involved. The intra-ocular growth in the right eye was composed of the same material as that found in the orbital tumour. Sections of the optic nerve of this eye, made at various points from the lamina cribrosa to its extremity, showed the same cell infiltration as found in other parts, though the sclerotic was still sound.

Dr. Agnew, of New York, spoke of a case of glioma in which he enucleated both eyes in 1874, and reported the patient as still living, being now seven years old.

Dr. CHAS. J. KIPP, of Newark, N. J., contributes a short paper *On Keratitis from Malarial Fever*—a large number of cases of which have come under his observation. It is commonly developed in the early stage of the intermittent fever. In some of his patients every fresh attack of the fever was followed by the corneal affection. One eye only is usually affected. The disease bears a close resemblance to the phlyctenular form, but the ulcers show a greater tendency to spread superficially. Spontaneous perforation of the cornea did not occur in any of his cases. The affection is a painful one, and the process of repair is slow. The local remedies found most useful are the pressure bandage, warm fomentations, and

atropia; while quinia, iron, and arsenic are administered internally. This disease is ignored in modern ophthalmological literature, and Dr. Kipp has been unable to find any description of it in the older works.

Dr. H. KNAPP, of New York, reports *A Case of One-sided Complete Blindness from Ischæmia Retinæ, ending in perfect Recovery.* The patient was an unmarried lady, 30 years of age, who had been exhausted by constant nursing of her father for seven months, and was much distressed by his recent death. Five days before, she had noticed that the sight of the left eye was completely obscured from above downwards to the extent of the upper half of the visual field. Four days later the lower half became darkened in the same manner. The pupil of that eye was slightly dilated, and did not respond to light when the other eye, the pupil of which was normal, was covered. The optic disks of both eyes were abnormally pale, and both arteries and veins were smaller and less numerous than usual; the ophthalmoscopic appearances were otherwise normal. Complete recovery resulted in a few weeks under the use of iron, generous diet, milk punch, and fresh air. Dr. K. was convinced that the case was not one of hysterical simulation.

Dr. KNAPP also reports *Eight Sclerotomies for Glaucoma*, and gives the following as his views as to the indications for the operation:—

"1. In cases of simple glaucoma with a narrow field of vision and marked excavation, I would prefer sclerotomy to iridectomy, and if both eyes are affected, operate on one at least by sclerotomy.

"2. In megagophthalmus (buphthalmus) congenitus I would only perform sclerotomy, since in such cases iridectomy is almost always fatal to the eye.

"3. In glaucoma of younger persons, *i. e.*, below 35 years of age, and in cases of hemorrhagic glaucoma, I would prefer sclerotomy to iridectomy, since the results of the latter operation in these cases are mostly unfavourable.

"4. Encouraged by the experience derived from the above-related operations, and on the strength of the statements of Wecker, Mauthner, and others, I consider it legitimate to try sclerotomy also in cases of acute glaucoma. If it prove equally curative as iridectomy, it will have a decided advantage over this operation by leaving the pupil round, small, and central."

Dr. G. C. HARLAN, of Philadelphia, contributes a *Note on a Case of Unusual Acuteness of Vision, with Circles of Diffusion*, as a striking illustration of the well-known, but sometimes forgotten fact, that the results of our usual method of testing the accommodation are far from accurate.

Dr. E. WILLIAMS, of Cincinnati, O., reports *Two cases of Cysts of the Iris*, illustrating the curability of cysts of the iris by surgical operation, and the destructive tendency of such tumours when left to themselves. One was the result of the presence of a small bird shot in the iris, where it had been lodged for eight years. What the patient called "a very small blister near the inner border of the pupil" had been noticed; but about eight weeks before the case came under observation, there were pain and redness of the eye, and the minute tumour increased to the size of a bean. As there was no vision in the affected eye, and its fellow was suffering from sympathetic irritation, enucleation was at once performed. A plate representing a microscopic section of the cyst accompanies the paper.

The other case was that of a child, 9 years of age, whose iris had been injured two years before by a piece of slate. The cyst was removed by iridectomy, and useful vision resulted. In the discussion that followed there was a general consent that these cysts originate in the epithelial layer of the iris.

Dr. C. R. AGNEW, of New York, reports *Three Cases of Persistent Pupillary Membrane*, and contributes a paper on *The Insufficiency of the Ophthalmoscope as the Sole Test of Errors of Refraction*, in which he contends that it is often impossible, however skilful the observer may be, to determine the refraction accurately with the ophthalmoscope alone, without the use of a mydriatic. A strong point is made by giving the history of a case in which several prominent ophthalmic surgeons had committed themselves to different opinions, none of which corresponded to the real facts as afterwards developed by atropia.

Three cases of *Neuritis after Measles* are reported by Dr. O. F. WADSWORTH, of Boston. Neuritis is a rare sequela of measles, and is to be considered rather as the result of a complicating meningitis than as a direct consequence of the measles.

Dr. JOHN GREEN, of St. Louis, Mo., reports a *Case of Detached Retina treated by Hypodermic Injections of Muriate of Pilocarpin*, with temporary improvement. Dr. Green also exhibited a *Combination Set of Trial-glasses, and a New Trial Frame*, the object of which is to "reduce the glasses in the trial-case to a comparatively small number, and those such as can be readily and cheaply procured." The sets can be obtained of Hunter, of New York, or Queen, of Philadelphia.

Dr. E. G. LORING, of New York, presented an instrument called *The Keratometer—a New Instrument for Measuring the Curvature of the Cornea*. It "consists of a metal disk in which are set a number of plane convex lenses of various curvatures, on the plane or posterior surfaces of which the representation of the iris is painted." The measurement is made by comparing the image of a window-sash formed on the cornea with that of the same object formed on the surface of the lenses, whose radius of curvature is known—"by matching the image of the real with that of the artificial eye." Dr. L. claims that a difference of less than one-hundredth of an inch in the radius of curvature, can be detected in this way.

Dr. WM. THOMSON, of Philadelphia, describes *An Instrument for the Detection of Colour-blindness*, which he has devised for the examination of the employés of the Pennsylvania Railroad. The instrument has been described in the *Medical News and Abstract* for December, 1880.

Dr. H. D. NOYES, of New York, showed a *Modification of Loring's Ophthalmoscope*, by means of which the series of small lenses can be more conveniently and quickly brought in succession before the eye of the observer. This is accomplished by a system of cog-wheels.

An Improvement in Concave Spectacle Glasses of High Power, suggested by Dr. JOHN GREEN, of St. Louis, consists in "making the principal refracting surface small, say two centimetres in diameter, and grinding it upon one side only—that turned toward the eye—of a double-convex, double-concave, plano-convex, plano-concave, or plane glass." Glasses ground in this way are very light, and a single grinding tool may be made to produce a great variety of lenses.

An Acute Glaucomatous Invasion, following closely upon a Single Application of a very weak preparation of Duboisia, is reported by Dr. JOHN GREEN, of St. Louis.

Dr. ED. S. LORING, of New York, describes *An Improved Operation for a New Pupil after Cataract Operations*. It is practically an iridotomy performed with a very narrow knife instead of with scissors. The knife is entered at the corneo-sclerotic junction, and passed entirely across the

anterior chamber. The point is then boldly depressed, and the membranes divided freely up to the attached margin of the iris.

In *A modified Operation for Discission of Soft Cataract*, Dr. JOHN GREEN, of St. Louis, uses the sickle-needle cystotome, and makes a linear incision in the capsule. Dr. Green also reports a *Case of Nucleus-like Bodies in the Lenses of a Child, escaping after Discission.*

Dr. H. W. WILLIAMS, of Boston, gives the result of his experince with *Optico-ciliary Neurotomy.* In most of his cases the results have thus far proved as satisfactory as those of enucleation, and he considers a reunion of the divided ciliary nerves as exceedingly improbable. In two instances where bits of steel had remained in the eye—in one case fifteen, and in the other two years—the operation gave immediate relief to urgent symptoms, which, some months afterwards, still continues.

Dr. H. D. NOYES reports a *Case of Buphthalmus, with Central Anterior Synechia, cured by total removal of the Iris.* The condition of the eye was the result of a wound by scissors received several years before. There was extensive bulging of the anterior half of the eye, with great thinning and stretching of the ciliary region. The iris was pressed against the inner surface of the cornea. Two or three months after the operation the globe was of rather less than normal size.

Dr. S. D. RISLEY, of Philadelphia, gives an illustration of *Dermoid Cyst of the Cornea.*

Dr. JOHN GREEN, of St. Louis, gives the result of his experience with the *Operation for Entropion*, described by him at the Fifth International Ophthalmological Congress in 1876. He has made several slight modifications in the operation as described in the proceedings of the Congress.

A *Photograph of the Fovea Centralis of the Retina*, presented by Dr. O. F. WADSWORTH, of Boston, ends the volume. The photograph was taken by Prof. J. W. S. Arnold, of New York, directly from a microscopic section. G. C. H.

ART. XXX.—*Lectures on Diseases of the Nervous System, especially in Women.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences, etc. etc. 12mo. pp. 238. Philadelphia: Henry C. Lea's Son & Co., 1881.

THE volume before us, dedicated to Hughlings Jackson, is somewhat discursive, and represents the gist of thirteen lectures upon nearly as many troubles or lesions of the nervous system, in females, as the title indicates. The cultivated colloquial style assumed by the author becomes the vehicle of a mode of thought and expression peculiarly felicitous in the case where instruction is sought to be conveyed in precise terms about matters in which the experiences of the patient are oftentimes in illicit commerce with the imagination, and the singular realities of etiology and history seem to deck themselves out in the attire of romance. Nor is the impression wanting that nowhere does the locutor appear to better advantage than in those strong points upon which he has bestowed so much attention and care.

The first lecture is occupied with the paralyses of hysteria; and the second with hysterical motor ataxia and hysterical paresis. The third treats of the mimicry of disease, as does also the fourth; then follow unusual

forms of spasmodic affections in women, tremor, and chronic spasms. Chorea, and the habit of chorea are made the subjects of the seventh and eighth lectures, followed by disorders of sleep in nervous and hysterical persons; by vaso-motor and respiratory disorders in the nervous or hysterical; by hysterical aphonia and gastro-intestinal disorders of hysteria; and, finally, lecture thirteenth recalls a familiar little volume entitled "Food and Rest," by Dr. Mitchell himself. The burthen of this lecture is the treatment of obstinate cases of nervous exhaustion and hysteria by seclusion, rest, massage, electricity, and full feeding.

In general we would accept the declaration of the author that originality deals in two ways with the matters under discussion, first as to new modes of viewing and studying well-known diseases, and second, as, in the case of Dr. Schliemann, to the unearthing of "subjects hitherto slighted in medical literature, or which are almost unknown to it." As a matter of formal presentation rarity of chorea in the black race, and its infrequency in the mulatto, may be referred to as illustrating the latter. But that which will naturally claim high originality is the system of charts introduced in connection with the study of attacks of chorea, as exhibiting or asserting a relation between their frequency and average relative humidity, state of barometer, temperature, rain fall and snow, and representing the months of onset in 170 cases, in a mean of five years; a table representing the number of storm centres passing within 750 miles of Philadelphia, and within 400 miles; and another showing the singular correspondence of the heat curve, 1871 to 1880 inclusive, culminating at the beginning of July, and that of infantile palsy cases culminating at the opening of August. And we might here, with advantage, introduce a conclusion of the author which, in connection with storms, it seems to him justifiable to draw, "that no single fraction of a storm explains satisfactorily the rise and fall of the chorea line, but it is where these are taken collectively, as in storm line, that the greatest resemblance is seen."

When we use the word original, however, we would not insist upon the total newness of the whole matter of the foregoing averages and deductions as applied to the volume before us, for Dr. Mitchell, in this *Journal*, in April, 1877, made it appear that "the area over which a storm has its influence is strikingly alike in chorea and in neuralgia," but we would give him a credit which he deserves, of exacting from various departments of knowledge, and especially through the employment of instruments of precision, most varied information about matters not hitherto supposed to be cognate, and of reducing the inchoate mass to limits of form and number which strike the sense.

In sum we would not withhold from this charming little work its due meed of praise, regarding it as very clever, its cleverness in many places mingled with wisdom, as offering food for thought, and as being remunerative for its perusal.

The typographical style and execution of the volume are greatly to be commended. C. J.

ART. XXXI.—*On Anchylosis, and the Treatment for the Removal of Deformity and the Restoration of Mobility in Various Joints.* By BERNARD E. BRODHURST, F.R.C.S., Surgeon to the Royal Orthopædic Hospital, etc. Fourth edition, 8vo., pp. 100. London: J. & A. Churchill, 1881.

THIS volume is written from the standpoint of a practical surgeon, and deals with the clinical symptoms and the treatment of stiffened joints. Its main object seems to be to direct the attention of the profession to the fact that anchylosis, when it is not bony, is best treated by forcible flexion. This method of manipulation was advocated by Mr. Brodhurst twenty-four years ago, previous to which time gradual and forcible extension were the usual means employed in attempts to restore stiffened and deformed joints. At the present time every true surgeon appreciates the all-important advantage of forced flexion as the first step in liberating articulations impaired by false anchylosis. The author in successive chapters treats of pathology, false anchylosis, diagnosis, treatment of false anchylosis, bony anchylosis, and treatment of bony anchylosis. As might be expected, the portion devoted to false anchylosis, its diagnosis and treatment, occupies the bulk of the book. This part is illustrated by reports of twenty-five cases selected from the great number treated by the author. The manner in which these cases are detailed, is often deserving of adverse criticism, for a large portion of a page is at times occupied by a garrulous account of circumstances that have no medical bearing whatever. A marked illustration of this will be found on page 57.

The chapter on pathology gives many important suggestions to the reader, but the definition of anchylosis is not a perfect one, since it seems to imply that in all kinds of anchylosis there remains a synovial membrane. This of course is not an idea which the author intends to convey, as is shown by a subsequent sentence, which states that in bony anchylosis the soft structures of the interior of the joint are removed. His statement that in false anchylosis motion is impaired but not wholly lost, will not apply to the few cases of fibrous anchylosis where motion is not perceptible, though the fibrous character of the stiffened joint is proved by manipulation under ether. Bony anchylosis is regarded as a natural change in certain parts of the skeleton in old age (page 2). May this not be due to chronic inflammatory changes rather than to a physiological process of old age? Mr. Brodhurst says that primary synovial inflammations are comparatively rare in childhood, which age is especially obnoxious to strumous affections. Synovitis certainly, however, occurs as the first result of traumatism in children. He does not appear to agree with Sayre as to the non-scrofulous origin of joint disease in children, but lays considerable stress upon the constitutional etiology of such disease.

The disastrous results of gonorrhœal rheumatism are enjoined upon the reader. The author regrets the use of the term gonorrhœal rheumatism, and states that though suppuration never occurs, fibrous anchylosis is a frequent sequel, and therefore makes the disease one of great practical importance. The pyæmic nature of this affection does not receive discussion at his hands.

In the chapter on diagnosis no mention is made of the fact that manipulation of a joint, the subject of bony anchylosis, will not be followed by inflammatory reaction, as will be the case if a false anchylosis is examined

in the same manner. The conclusions derived from his experience in breaking up fibrous anchylosis, which are given on pages 37–47, are exceedingly interesting. They may be given here in abstract. Anæsthesia should be complete, tense muscles and fascia should be divided, and the punctures allowed to heal before forced flexion is applied; moderate force alone should be used; the adhesions are to be ruptured by flexing the limb; and the surgeon is to be satisfied with rupture of the adhesions at the time of operation, without attempting restoration of the limb until inflammatory reaction has somewhat subsided. Some of these precautions are doubtless stated too dogmatically, for their necessity is contrary to the experience of many operators; but it is well for the author, perhaps, to enforce over cautiousness upon those undertaking these procedures for the first time.

The prominence given the American names, Barton, Brainard, and Sayre, in the chapter on the treatment of bony anchylosis, is agreeable to those who believe in the practical character of American surgery; but not enough credit is given, perhaps, to his own countryman Adams, who has done so much to advance the position of subcutaneous osteotomy as a treatment for bony anchylosis with great deformity.

The style and arrangement of the monograph are hardly logical, as is shown by a tendency to repetition, which annoys the reader by suggesting that the author either thinks his audience dull of comprehension, or is uncertain as to what he himself has already written. On pages 10 and 20, his statements regarding gonorrhœal rheumatism are almost contradictory; and the insertion of the history of the same patient, quite at length, in two distinct places seems unnecessary. The practical character of the book, however, should atone for many literary inelegancies. J. B. R.

ART. XXXII.—*Photographic Illustrations of Cutaneous Syphilis.* By GEORGE HENRY FOX, A.M., M,D., Clinical Lecturer on Diseases of the Skin, College of Physicians and Surgeons, New York, etc. Numbers 1 to 6. New York: E. B. Treat.

THE first fasciculus of Dr. Fox's atlas includes three views of the erythematous syphiloderm, and one each of the pigmentary, and leucodermic varieties. The arrangement of the eruption, that is its general grouping, is well shown in the first mentioned, while the two latter are extremely interesting representations of unusual forms and results of the disease. The second fasciculus includes pictures of the lenticular and miliary papular lesions, of the papulo-squamous eruption, and of another form of papular rash. The third of these, that of the papulo-squamous eruption, is one of the best photographic illustrations which we have ever seen, and is unusually happy in its colouring. The third fasiculus includes photographs of the papular circinate, papulo-squamous, papulo-pustular, and pustular eruptions. In all of these, the grouping of the lesions is well shown, but their individual character is very imperfectly demonstrated, so that he should be a rash diagnostician who would be willing to affirm the nature of the lesion in every case without reference to the name given below. The fourth fasciculus contains representations of papulo-pustular and pustular lesions which are very well portrayed but are a little wild in

colour. The photograph of onychia, which closes the fasciculus, would better represent the effects of raspberry picking than those of syphilis. The fifth fasciculus is admirable, the representations of the moist papule, and particularly of the papulo-squamous lesions of the palm being wonderfully good. A picture of non-syphilitic disease, "hydroa or pemphigus iris," of the back and front of the hand brought in for comparison is also an admirable picture. The representation of palmar and plantar lesions is continued in the sixth fasciculus forming a unique series of pictures of these often-puzzling eruptions. A photograph of the tubercular syphiloderm ends this fasciculus of which, as of the others, with the exceptions above noted, we have but little to say except in praise. These photographs are far in advance of the series of skin diseases recently published by Dr. Fox, and we think mark a decided progress in the photographic representation of diseases of the skin. The letter-press is crisp, clear, and agreeable reading. It is not simply a description of the plates but a short treatise on syphilis. A. V. H.

ART. XXXIII.—*A Manual for the Practice of Surgery.* By THOMAS BRYANT, F.R.C.S., Surgeon to, and Lecturer on Surgery at, Guy's Hospital, etc. Third American from the Third Revised and Enlarged English Edition. *Edited and Enlarged for the Use of the American Student and Practitioner.* By JOHN B. ROBERTS, A.M., M.D. Pp. 1005. Philadelphia: Henry C. Lea's Son & Co., 1881.

ONLY two years ago the second American edition of this book appeared and received due notice in the April number of this *Journal* for 1879. The publication of the third American from the revised and enlarged English edition with notes and chapters by an editor of our own country is a trustworthy evidence of the professional appreciation of the good qualities of this manual. The charges that have repeatedly been made against the diction and literary style of the author have justly failed to counteract the advantages of his production as a condensed yet comprehensive exposition of the principles and practice of surgery. He who begins the study of medicine accomplished in literary attainments will be content with a proper treatment of the special subjects of a text-book, regardless of literary grace; and the latter would not materially influence the standing of students devoid of academical training. To advanced students and practitioners whose inclination or professional requirements lead them to seek more profound surgical knowledge than is ordinarily demanded, many other volumes of deeper research and larger scope can be recommended.

Numerous and valuable are the additions of the American editor, of which those of but few lines are often as important as entirely original chapters. The terse advice to open acute abscess early "to hasten the cure, lessen the tissue destruction, and shorten the duration of suffering," and to use Martin's bandage in preference to strapping an ulcer is of more value to the novice in the profession than the chapters on litholapaxy and paracentesis of the pericardium.

While in London in 1877, the reviewer had an opportunity of witnessing Mr. Bryant ligate the common femoral in a young woman afflicted with elephantiasis of both lower extremities. The operation, practised

on the right side, was followed by gangrene of the foot and death. Prior to the adoption of so dangerous a procedure as the deligation of the main artery of a limb, Dr. G. Fischer's suggestion should always be followed, *i. e.*, a prolonged compression, digital or instrumental, should be employed. In two instances we have known this practice to yield as good results as could be expected from the more hazardous interference. It is difficult to comprehend in what manner Dr. Morton's excision of a part of the nerve-trunk of a limb, which is the seat of an elephantiasis, will permanently effect the disease.

So much has recently been accomplished, especially in France and England, in the furtherance of our knowledge of localized functions of brain, that it causes just astonishment to find only cursory mention of the researches of Charcot, Ferrier, and Lucas-Championnière, in a treatise that is supposed to be abreast with the progress of the times. The art of surgery has so far advanced that, with the proper antiseptic precautions, exploratory operations on the skull in brain injuries indicated by certain localized manifestations are not only justifiable but are positively demanded to save life or function, if even the external injury appears only trivial in character. Indeed the conversion of a simple into a compound fracture is even strongly advised by the American editor "to complete the understanding of the nature of the injury. It is felt that too great stress can hardly be laid upon the importance of this exploratory incision in severe injuries of the head with suspected fracture of the cranium." Notwithstanding this belief of the author, no rules to regulate operative interference and determine the seat of the operation are given.

Intimately associated with the operative treatment of pericardial effusions is the name of Dr. John B. Roberts, whose production on this subject was noticed in the April number of the *Journal* for last year. Several relevant paragraphs have been added to the volume in review, due consideration being given to the methods of aspirating the pericardium, the precautions to be observed and the results that have hitherto been obtained. The mortality of the operations recorded seems rather high ($62\frac{2}{3}$ per cent.), but this is materially increased by the inclusion in the death column of a number of cases that lived several weeks after the operation, death resulting not from the operation, but from the disease for the relief of which it was performed.

Perhaps the most important part of a work on practice is that devoted to the treatment of cases of emergency that so often call for immediate relief. The radical treatment of urinary retention does not often require the instantaneous performance of a grave operation, but the distended bladder must be relieved if but temporarily. English surgeons still cling to the rectal tapping if the attempt to use the catheter prove abortive, notwithstanding the fact that when performed by a beginner it is an operation likely to be followed by serious results. Indeed Mr. Bryant endorses the advice, "that in all cases of retention of urine from stricture in which relief cannot be given by means of rational and not forcible catheterism, the operation of puncturing the bladder through the rectum should be performed." Although Sir Henry Thompson alludes to the "ingenious proposal" of Dieulafoy to aspirate the distended bladder, it is a practice that has found few followers among our English *confrères*. In this country we believe Prof. Whittaker, of Cincinnati, first successfully relieved a patient suffering from vesical retention by repeated aspirations until an operation for permanent cure could be performed.

Thanks to German surgeons and pathologists particularly, the attention of the profession has in recent years been largely directed to the nature of the chronic diseases of the joints followed by destructive lesions. With few exceptions English writers fail to see in these affections more than a "low form" of inflammation in which tuberculous deposits are only occasionally encountered. Indeed Mr. Bryant considers them of such rarity that preparations containing them are to be regarded as pathological curiosities. How much at variance this view is with that entertained on the Continent appears on perusal of the recent communications of König, Schüller, Lannelongue, and others. According to these authorities the vast majority, indeed if not all chronic articular affections with destructive tendency, are tubercular in origin and in a certain measure independent of the traumata to which they are usually attributed. Here, as elsewhere, the truth will probably be found between these extreme views, although experimental research appears to have established the fact that in animals at least fungous degenerations of the joints cannot be induced without a preparatory infection of the system with tuberculous virus. It certainly is true, however, that a careful inspection, macroscopic and microscopic, will reveal the existence of tuberculous deposits in the form either of caseous masses or miliary nuclei in the soft as well as in the firmer structures of the joints that are the seat of fungous degeneration. It is to be regretted that clinically the differentiation of the various forms of chronic inflammations of joints is as yet beyond our diagnostic powers.

Besides the numerous and judicious paragraphs and chapters inserted into the text by the American editor, the edition before us has been enriched by sixty-three original illustrations of uniform merit. Altogether the improvements of this volume on its predecessors are sufficiently numerous to have warranted the publication of this before the appearance of another English edition. J. R.

ART. XXXIV.—*Transactions of the Obstetrical Society of London.* Vol. XXII., for the year 1880. 8vo. pp. 314. London: Longmans, Green & Co., 1881.

OF all the special medical societies of Europe, there is perhaps no one that exceeds in activity the one whose annual volume of Transactions lies on our table, and is always a welcome visitor of the spring season. With an enormous list of members, embracing some who have made themselves famous in two hemispheres and are among its most active contributors, it is not to be wondered at, that its discussions are often of great value, quite voluminous, and occasionally more practical than the articles which have given rise to them. In reading these discussions we are often struck with the fact, that the most active gynæcological and obstetrical practitioners of London generally manage to be present at a large proportion of the ten monthly meetings held during the year. The *very busy men* of the great city appear to be able to find time to attend, and to take an active part in the meetings. We could cite a dozen whose names are repeatedly found in the indexes of the Transactions, and who must be quite as much occupied with attending the sick as some of our society members, who are "*really so busy that they cannot possibly find time to attend.*" Like the bee-hive, the inhabitants of which are divided

into *drones* and *workers*, so our societies consist of a few who do all the work, and a large number who but seldom write a paper or attend a meeting. We could profit much in our country by imitating the action of London's busy physicians, and learning the secret of their managing to get to these meetings. "Where there is a will there is a way," will no doubt explain much that is otherwise almost unaccountable. No doubt Drs. Barnes, Hicks, Playfair, Gallabin, and their co-workers find it pays to work for science quite as satisfactorily as it does those who cannot spare the time to do it, or think they cannot. It sounds well to appear to be so run down with work; but who will get the greater credit, the really busy man or the claimant who may possibly not be? We need the spirit of the leading medical society men of Europe to wake up the dormant energies of men in America whose experiences ought to be used for the better education of their younger and less occupied brethren in the profession.

As several of the articles contained in this volume have been already given in abstract in the pages of this *Journal*, or of the *Medical News and Abstract*, we shall confine our attention to such papers as have not been noticed.

Rupture of Fallopian Tube and Death by Hemorrhage. Case occurred to Mr. J. KINGSTON BARTON, and was decided by a committee who examined the specimen to have been due to a Fallopian pregnancy and the giving way of the cyst, at about a month of gestation. The patient was 35; married two months; was menstruating at the time of the rupture. The chief value of the case lies in the facts, that the impregnation was early after marriage; that rupture was at an early period; that the woman had been menstruating regularly; and had been four days in this condition when the rupture took place. The right ovary showed a well-marked *corpus luteum*. There was no ovum discovered, or *membrana decidua*.

Hot Infusion of Cotton-plant Leaves, as a Galactogogue. Dr. IZETT W. ANDERSON, of Kingston, Jamaica, W. I., one of the successful American Cæsarean operators (1863), recommends very highly this remedy, as the most active he has ever met with, after an experience with it of seventeen years. Six or eight fresh leaves are infused in a cup of boiling water carefully covered, and four or more of these cups are taken in twenty-four hours. It has long been a favourite domestic remedy with the Jamaica negroes. He was first led to discover its value by seeing the lacteal secretion restored by its use in the woman upon whom he had performed the Cæsarean operation, and whose breasts were destitute of milk when he ceased his attendance at the end of forty-six days. The value of this remedy might easily be tested in a large portion of the United States, as the plant will grow readily, where the season is not long enough to mature the bolls; a fluid extract might also be experimented with.

Foreign Bodies in the Vagina. Two cases reported by Dr. CHARLES H. CARTER, of London. In No. 1, a girl of 17, the article introduced was a large sewing-machine reel, which had been in the vagina four years. The passage appeared to end in a short cul-de-sac; but close examination revealed the existence of a small opening, through which pus escaped. The cicatricial diaphragm was dissected out and the reel removed, which operation resulted in the formation of a ring of dense tissue. The girl married; became pregnant; was delivered after induced labour at eight months, by incising the band in three places; child died in six hours. A second labour at maturity ended favourably without assistance. In No. 2,

aged 20, also single, the foreign body was the metal cup of a drinking-flask, 2¼ inches long, and 1¾ inches in diameter at the top. This had been in the vagina two years; had perforated the bladder; and was heavily incrusted with phosphatic deposit, which also filled its cavity. The cup was removed and fistula closed by nine silver wire sutures—cure complete.

Specimens of Two Cases of Imperforate Anus were exhibited by Mr. ALBAN DORAN; one obtained from a male infant which died at the age of six months, in which the rectum opened into the urethra, and presented just above its terminus a distinct sphincter. The other was obtained from a girl who lived to the age of eleven, and in whom the rectum opened into the vagina, which latter became impacted with feces. To remove this an enema was given by a nurse, which set up an inflammation resulting in pelvic cellulitis and death. In neither case was it possible to open the rectum in front of the coccyx.

Multiple Calculi removed from a Prolapsed Bladder. The case was that of a woman of 61, having a complete procidentia uteri, with the bladder inverted and drawn out of the vulva; she was also the subject of rheumatoid arthritis, and much crippled thereby. Finding a number of calculi, and some quite large, Dr. A. L. GALABIN performed lithotomy in preference to dilatation. He removed 12 large calculi, and about 50 small ones, with a large quantity of fine sand; these calculi were chiefly of uric acid, the largest measuring 1½ by 1¼ by 1 inch; and the weight of the whole 8¾ ounces. The uterus was returned after a complete procidentia of seventeen years, and secured in place by a large elastic ring pessary; the wound healed in ten days. No disturbance followed the operation, and perfect relief resulted. The preference of the knife was commended in the discussion that followed the report of the case.

Dr. J. BRAXTON HICKS reports *a Case of Abdominal Pregnancy in which concealed accidental hemorrhage occurred* about the seventh month of gestation, causing alarming symptoms, for which he performed laparotomy, cutting through the placenta in the operation, as it was seated upon the abdominal wall. Although not strictly a *primary* operation, as the fœtus was dead, the risk was equal, because the vascular character of the placenta was still unchanged, death having but just occurred. The placenta had been largely torn from its attachment by an effusion of blood between it and the abdomen, and the part still adherent could readily be separated by the hand. The woman sank and died shortly after the operation was completed. At the time of the operation her pulse was 140, and respiration 34; she had severe vomiting, and was in a cold sweat; the internal hemorrhage had lasted three hours, and the abdomen was tense and painful from the accumulation of blood. There was no bleeding after the operation. It is barely possible that an early removal of the fœtus might have saved the woman.

Dr. GRAILY HEWITT presented a *report on* 67 *Cases of Uterine Distortion or displacement* treated by him; which led to a prolonged discussion, extending into a second meeting, at which Dr. BANTOCK presented a set of remarks covering much more than the original paper, in the course of which he paid the following compliment to the late Prof. Hugh L. Hodge:—

"The mechanical treatment of uterine displacements received its first great impulse from the late Sir Jas. Simpson, to whose inventive genius gynæcology owes so much. But it is to Dr. Hodge that we owe the greatest advance—viz., in the introduction of his most admirable instrument. Here let me say, in justice to that inventor, that men have exercised a great amount of ingenuity in small

things, and with smaller success, in their attempts to improve this instrument, until their name is legion. As Gaillard Thomas says, all the varieties of lever pessary now employed are modifications of his (Hodge's) original and most valuable idea, and act upon the principle which it developed. But because it has received a little extra bend here, or been straightened out there, or has been narrowed in one place, or widened in another, it must, forsooth, receive the name of the ingenious man who has effected this infinitesimal alteration in it. Where it has been tortured out of all semblance to the original, I willingly grant the inventor the honour of its fatherhood, with all the rights thereto appertaining. But I have no sympathy with such pursuit of notoriety, and such efforts as tend to deprive a man of that credit which is his due. The fact is, every case requires that the instrument be modified to suit the capacity and shape of the vagina, just as when one enters a bootmaker's shop he has to try on boot after boot until he gets one that fits. No one is more aware of the necessity of this modification than was Dr. Hodge himself."

It is not necessary to say that Dr. Bantock is an advocate of the pessary in the treatment of uterine displacements. He employs the Hodge form, made of pewter, and exhibited one that had been worn continuously for twelve months which was only very little tarnished. He also recommends the intra-uterine stem pessary as essential in obstinate cases of ante- and retroflexion of the uterus. He had never seen the cradle pessary accomplish any good result in the treatment of anteflexion.

Dr. Hewitt, in his paper, recommends rest in bed; nutritious diet; knee-and-elbow replacement; Hodge pessary for retroversion and retroflexion; cradle pessary for anteversion or flexion; and restoration of obstinate flexures by the introduction of the sound once or twice a week.

The discussion of this paper showed how various and often opposite are the views upon the management of uterine flexures and displacements held by leading gynæcologists, according to their own successes or failures with different methods and appliances. An early disastrous experience will often condemn a new method with one, and the contrary recommend it to another of perhaps equal skill.

Rotatory Action in using the Forceps, is the title of a paper by WILLIAM STEPHENSON, M.D. What the author means by "rotation" of the head is not only the usual application of the term, but includes also flexion and extension. He opposes the teaching of traction in a *straight line*, and claims that the force exerted upon the head should be such as to favour and assist the changes of relation effected in a natural delivery by *flexion*, *rotation*, and *extension;* that not only should onward force be exerted, but in such a way that, at the same time, the relations of the head and pelvis in extrusion should be carefully maintained; and that the pendulum (improperly termed *lever*) action should be discarded.

"The general rule which I would suggest is: *With the onward traction, made in the direction of the axis of the pelvis, must always be combined such a movement of the instrument as will tend to impart to the head the rotatory movement which observation teaches us takes place at the particular stage of the mechanism.*" (Page 221.)

"To produce flexion, the chief reliance must be placed in the modification of the rule of traction. Rotatory movement must always be more or less combined with traction, but not from side to side, or now one way, now another. The head under the natural forces is never driven out like a cork from a soda-water bottle, nor does it wriggle out like an eel. Rotatory action must be imparted, but it must be made with steady purpose, in imitation of the natural mechanism." (Page 223.)

"So far as flexion or extension is concerned, we have always a guide in the direction of the sagittal suture, and the rule I would suggest is: *Whilst the force*

should always be exerted with strict attention to the direction of the axis of the pelvis, the line of traction should be in a slightly curved direction, the curve passing out of the line of the axis in a direction corresponding to that of the sagittal suture, towards the side where the forehead lies for flexion, to the side on which the occiput is for extension." (Page 223.)

"Much of the differences of opinion regarding the management of the forceps arise out of vague, inaccurate, or erroneous ideas regarding the mechanism of labour."

"The generally entertained conception of the movement whereby the occiput rolls forward is that rotation occurs on a vertical and central axis; that, as the occiput turns forward, there is a corresponding and equal turning backwards of the forehead; the movement is often spoken of as the 'turn of the face backwards into the sacrum.' This is not what happens. The movement is effected by the head rolling on the anterior frontal bone. . . . In occipito-posterior positions the movement is by a rolling and gliding motion. Here the forehead does move backwards, but never into the hollow of the sacrum; it always describes a smaller curve than that of the occiput. . . . The rotation then . . . is composed of a rolling on the anterior frontal bone, flexion of the head, and a rotation on the longitudinal diameter, whereby the posterior half moves more than the anterior." (Page 225.)

"It is simply impossible for the head to perform these movements when in the tight grasp of the blades, so that 'the head and the forceps make practically a continuous bar.' There must be some gliding between the blades. *When occipital rotation, therefore, is taking place, the grasp should be as slight as is compatible with moving the head.*" (Page 226.)

The author recommends a careful study of the mechanism of labour, as preparatory to the proper understanding of delivery with the forceps. The late Prof. Hodge was very careful to teach the connection between natural delivery and that under the forceps, and to show that the instruments were to follow with the head its natural movements. He believed that the blades of the forceps should fit and be applied to the sides of the fœtal head, and that they followed all the movements of the same when properly handled. If the forceps are of such a form as to closely fit the head, there is no reason why they should antagonize its movements in skilful hands. Certainly the light and delicate blades of Sawyer[1] could be so applied as to demonstrate the possibility of rotation with, and not within, them. With kite-shaped fenestræ and widely-set blades, the rotation may possibly be interfered with, or occur within them; but this certainly is not the case in many deliveries under the blades of Davis, as variously mounted with long and short handles.

Conjoined Twins. Dr. PLAYFAIR exhibited the Bohemian sisters, which were three years old in January last. They are united posteriorly by their sacrums, and are the counterpart of the Hungarian sisters, born in 1701, who lived to be 21 years old[2] (not 23, as generally stated), and the Carolina sisters, now nearly 30 years old.[3] It is remarkable that the only cases of long survival of this order of monstrosity, in a period of 180 years, should have all been females.

On the Induction of Abortion as a Therapeutic Measure, is the subject of a paper by WM. O. PRIESTLEY, M.D. As there can be no question of the occasional necessity of this procedure, it is important to define the conditions which render it justifiable; these, according to the author and the discussion, may be stated as the following:—

1. "Such narrowing or deformity of the female pelvis, clearly ascertainable during the earlier months of pregnancy, as will absolutely preclude the birth of

[1] Sawyer's forceps weigh but five ounces.
[2] Born Oct. 26, 1701; died Feb. 8, 1723.
[3] Born July 11, 1851.

a viable child. The smallest diameter permitting the passage of a living child has been calculated at 2¾ inches. If, therefore, the largest diameter present is less than this, either abortion must be induced, or, the patient being allowed to go her full time, must be delivered by craniotomy or embryulsion, or by Cæsarean section."

2. "When the genital canals are so narrowed by the presence of tumours, cicatrices, or of malignant disease, that the transmission of a viable child at a later period is impossible."

3. "In obstinate vomiting depending on pregnancy, when the patient's strength is so reduced that a fatal result is anticipated, if relief cannot be afforded."

4. "In eclampsia or puerperal convulsions during early pregnancy, with or without albuminuria, where the attacks are so frequent and severe as to imperil the life of the patient. In these cases all the resources of art for the treatment of convulsions should first be exhausted, and abortion only be induced as a last resort to save life."

5. "In some instances of irreducible retroversion or flexion of the uterus," where grave symptoms imperil the life of the patient.

6. "In cases of severe and uncontrollable hemorrhage during early pregnancy threatening the life of the patient."

7. "In certain acute and chronic diseases where the complication of pregnancy is undoubtedly endangering the safety of the patient, and where bringing gestation to an end enhances her chances of recovery." As in acute dropsy with albuminuria; hemorrhage from the bowels threatening to end fatally; heart-disease with dangerous dyspnœa; severe chorea; mania depending on pregnancy; nephritic retinitis with albuminuria; etc.

General Rule.—The operation is legitimate only "*when the life of the mother is so imperilled by the continuance of pregnancy that emptying the uterus presents itself as the only alternative to save the patient.*"

In all cases, where possible, a consultation should be held as to the necessity or propriety of operating, in order that there shall be no question as to the legitimacy of the procedure. We have known instances in which this was not done, even by very conscientious men; but the urgency of the cases demanded such immediate action that there was no time to be lost. R. P. H.

ART. XXXV.—*The Student's Manual of Venereal Disease, being the University Lectures delivered at Charity Hospital, B. I., during the Winter Session of* 1879–80. By F. R. STURGIS, M.D., Clinical Lecturer on Venereal Diseases in the Medical Department of the University of the City of New York, etc. 12mo. pp. 196. New York: G. P. Putnam's Sons, 1880.

IN his preface Dr. Sturgis remarks that books are apt to be read in inverse proportion to their length, and that with this fact in view he has eschewed all mooted points in venereal medicine. This will no doubt be considered rather an assumption by the "unicists," when they read on the very first page of the first chapter that gonorrhœa, chancroid, and syphilis are distinct and separate from one another, "having nothing in common with each other, although they may all be present upon the same person at the same time." And further, "of these three diseases, only the last one, syphilis, is constitutional; the other two, gonorrhœa and chancroid, are local. Remember, then, *gonorrhœa and chancroid are local. Syphilis is not; it infects the entire system.*" Nevertheless

this opinion is that which is held by almost every syphilographer of eminence in the world.

Starting with this declaration of belief, the author does not dwell at any considerable length upon theoretical questions, but takes up at once the practical points of the diagnosis and treatment of the simple venereal ulcer (chancroid). Next he discusses syphilis, and finally gonorrhœa.

It is not necessary for us to review the book before us in detail. There are in it some few statements with which we do not entirely agree, but to dissent much would be to place ourselves in opposition not only to the author, but also to the best syphilographers of the present day.

The book is put forth as a manual, not as a treatise, and it is all that it was meant to be. Its brevity and its cheapness are no trifling recommendations, and it would be well if these should cause it to get into many libraries, the owners of which are at present utterly without well-defined and accurate views in regard to a subject of the utmost importance to themselves and their patients. It is altogether too common nowadays for men, otherwise competent, to know almost nothing about the real nature of syphilis. To justify one in speaking with great positiveness about it requires special and extended study; but, while such manuals exist as the one before us, there is no excuse for mistakes such as are still often made.

C. W. D.

ART. XXXVI.—*Experimental Researches on the Temperature of the Head.* By J. S. LOMBARD, M.D., formerly Assistant Professor of Physiology in Harvard University. 8 vo. pp. 100. London: H. K. Lewis, 1881.

IN 1879 Dr. Lombard published a work on the "Regional Temperature of the Head," in which the results of sixty thousand observations were recorded. Three distinct essays are bound together in the present volume. The first is on some points relating to the normal temperature of the head; the second is on the effect of voluntary muscular contractions on the temperature of the head; and the third is on the influence of the temperature of the air on the temperature of the head.

Broca, Gray, Maragliana, and Seppilli, and a few others, came to the conclusion, from their observations, that the left side of the head has uniformly a higher temperature than the right. Lombard, however, found in the experiments published in 1879, that every one of the small spaces into which he divided the surface of the head might be hotter on the right side or on the left in turn. The idea suggested itself to him that *the degree of absolute temperature* of the parts examined might have something to do with the presence on the right side at one time, and on the left at another, of superiority of temperature, or again, with the presence at certain times of equality of temperature. The experiments recorded in the first of the three essays were made to test this idea. A part of the head covering the "frontal station" of Broca was selected for examination. This station is somewhat back and above the external angular process of the frontal bone. The absolute temperature of one side was first obtained. The difference of temperature between the two sides was then taken, and this difference, added to or deducted from the absolute temperature first obtained, gave the absolute temperature of the second side. Both the

thermometer and thermo-electric apparatus were used. At least fifteen careful comparisons of the two sides were made at each step of the investigation. Four elaborate tables of results are given, and these are carefully analyzed. The conclusions reached are somewhat contradictory.

"Summing up the results of all our analyses, it would seem that the degree of absolute temperature has no definite influence on the frequency of occurrence of superiority of temperature on either side of the head, but a limited influence, at best, on equality of temperature of the two sides; at every absolute level each of the three conditions may be found with varying frequency at different times."

Lombard compares the two sides of the head to two furnaces of equal range, but the fires of which are, to a certain extent, managed independently of each other, and with a variable degree of regularity, the relative powers of the two being thus uncertain, and either one likely at any moment to surpass the other.

He doubts the reliability of conclusions drawn from examination of the temperature of the head in disease, unless much greater latitude be given to normal variations of temperature, both absolute and relative, than has generally been accorded by those who have given special attention to this subject.

The experiments on the effects of voluntary muscular contraction on the temperature of the head, were the joint work of Dr. Lombard and Frederic H. Haynes, M.D., physician to the Warneford Hospital, Leamington. In April, 1880, Dr. R. W. Amidon, of New York, published in the *Archives of Medicine* a series of experiments entitled, "The effect of Willed Muscular Movements on the Temperature of the Head: New Study of Cerebral Cortical Localization." This paper was the prize essay of the Alumni Association of the College of Physicians and Surgeons of New York, March 12th, 1880. Amidon sought to prove that willed muscular movements caused elevation of temperature at the surface of the head, sufficiently marked to be capable of detection with thermometers. He also took the ground that exercise of certain muscles, or groups of muscles, affected the temperature of definite and limited areas of the integument of the head. Each muscle, according to him, had a special thermal centre in the cortical substance of the brain, the temperature of which centre was increased when the muscle acted sufficiently. This increase, he held, could be detected in a circumscribed area of the overlying integument by means of instruments of no great delicacy.

"Thus contraction of the quadriceps extensor cruris of one side caused an average rise of 0.409° C., on the opposite side of the head, in a space commencing 300 mm. behind the root of the nose, and extending backwards, on the median line, 80 mm., and laterally from the same line, 50 mm., the extremes of the rise of temperature being 1.388° C.; while contraction of the orbicularis palpebrarum of one side produced a rise averaging 0.342° C. (the extremes were 0.833° C., and 0.1388° C.) on the opposite side of the head, in a space situated about 100 mm. above, and a little to the rear of the external auditory meatus, and having a diameter of about 18 mm."

Dr. Amidon used Gray's modification of Seguin's surface thermometer. He mapped out some twenty-five districts on the surface of the head, as thermal centres or areas of a corresponding number of muscles or groups of muscles. He also drew attention to the correspondence between these external areas and Ferrier's psycho-motor centres of the cortex. We might also say, in passing, that he located psycho-motor centres in the frontal lobes, additional to those indicated by Ferrier.

As early as 1866–67, Lombard, while experimenting with thermo-elec-

tric apparatus on the influence of different mental states in the human temperature, was led to try the effect of muscular contraction in the temperature of the head. The muscular effect was made use of simply as a means of fixing the attention. In a few instances slight rises of temperature were noted.

In the investigations made by Drs. Lombard and Haynes, all the essential experimental details laid down by Dr. Amidon were carefully observed. Thermo-electric apparatus was, however, substituted for thermometers. The particulars of an elaborate series of experiments are given. These were as follows: (1) Thirty-two experiments on the contraction (simultaneously) of the extensor muscles of the leg and of the toes (quadriceps extensor cruris; and the extensors proper of the toes), and of the flexors of the tarsus upon the leg (tibialis anticus, and peroneus tertius). (2) Four experiments on the contraction of the muscles of the calf. (3) Sixteen experiments on the contraction of the biceps of the arm. (4) Ten experiments on the contraction of the trapezius and the levator anguli scapulæ. (5) Ten experiments on the contraction of the orbicularis palpebrarum. (6) Nine experiments on the contraction of the orbicularis palpebrarum, levator labii superioris proprius, zygomatici, and risorius, all acting simultaneously. In each of these series of experiments the pile was placed at selected points on the side of the head opposite to the side of the body on which the muscles were made to contract. The points selected were those used by Dr. Amidon also, and supposed by him to correspond to psycho-motor cortical areas.

The results of the experiments of Drs. Lombard and Haynes were most decidedly contradictory of the views held by Dr. Amidon. According to the latter, rise of temperature was as a rule the result of the willed muscular movements. Of the eighty-one results arrived at by Drs. Lombard and Haynes, only three, or less than four per cent., could be construed as affording evidence of a rise of temperature due to muscular contraction *per se*. The evidence seemed to be greatly in favour of the view that the muscular movements brought about a *fall* of temperature. The cases in which a fall of temperature was the ruling condition were more than five times as numerous as those in which a rise of temperature prevailed. MM. Bert and Franck have also repeated Dr. Amidon's experiments and have failed to confirm his results.

Drs. Lombard and Haynes conclude as follows:—

"But although there is not sufficient proof of a rise of temperature in the head specially due to muscular contraction (leaving out the question of exact localization of such a rise), yet it would seem, that, in a certain number of cases, the muscular movements, *in some way, cause a disturbance of the temperature of the head*, this disturbance showing itself in elevations or depressions, or again, in irregular fluctuations of temperature. In fact, the variations of temperature noted in a number of the experiments were greater than those ordinarily met with in the quiescent natural state; but in exactly what way these variations are connected with the muscular movements is not yet clear."

The experiments which form the basis of the third essay before us were made with a view of obtaining a general idea of the extent to which the temperature of the surface of the head is affected by the temperature of the surrounding air. This question has, of course, an important bearing upon practical cerebral thermometry. The results of the experiments are presented in a series of elaborate tables. The following are the averages of four of these tables:—

	Average temp. of air.	Average temp. of head.
Table 1	18.9420° C.	35.7945° C.
" 2	13.6708° C.	35.0776° C.
" 3	9.6938° C.	34.8098° C.
" 4	7.0147° C.	34.1939° C.

"From the above values there appears to be a general relation between the average temperature of the air and of the head in the several tables compared with each other. Thus as the average temperature of the air falls, in the list, the average temperature of the head likewise declines; but the fall in the head is but slight compared with that occurring in the air, the maximum of the former being only 1.6° C., while the latter at its greatest, is 11.9° C."

Dr. Lombard believes that the *seasons* undoubtedly have an effect on the results of experiments such as he performed, apart from the simple absolute temperatures concerned.

Whatever may be the fate of cerebral thermometry as a means of diagnosis, such praiseworthy labours as those of Dr. Lombard must be most relied upon in determining its scientific position. C. K. M.

ART. XXXVII.—*The Relations of the Abdominal and Pelvic Organs in the Female, illustrated by a full-sized chromolithograph of the Section of a Cadaver frozen in the Genu-pectoral position, and by a series of wood-cuts.* By Professor ALEXANDER RUSSELL SIMPSON and Dr. DAVID BERRY HART. Folio, pp. 11. Edinburgh: W. and A. K. Johnston, 1881.

THE process of making "frozen sections" is well described here, and as it has but rarely been practised in this country it may be well to allude to it. In this special case in order to prevent the displacement of the viscera by the pressure of the freezing mixture the cadaver was inclosed in a galvanized zinc case, surrounded by a large wooden box. The box had holes in it for the escape of the water, and the ice and salt were frequently stirred up. The body was kept in this for a week—a longer time than usual—but necessary on account of the unusual posture. The zinc case being then removed, a broad, salmon-bellied, two-handled saw, with moderately sized teeth, was used to saw it in the median line, water from the melting mixture being occasionally thrown over it. Each half was then replaced in its half of the zinc case and the freezing mixture in order to make accurate, full-sized tracings. This was done by thin, transparent plates of gelatine. The drawing was then transferred to paper, coloured, and lithographed. For permanent preservation the sections are to be sawn in slabs two to four inches in thickness; placed, while still frozen, in suitable block-tin or glass trays, surrounded by plaster of Paris to prevent displacement on freezing, and preserved by weak spirit.

The author does not believe that the distension of the vagina by air in the genu-pectoral posture alone will replace the retroverted uterus, but advises that the volsella be used to draw the uterus down towards the perineum, and that the cervix be then carried towards the sacrum, when the fundus by its weight will swing forwards; or, that rectal distension be used; or, that direct pressure on the fundus be employed. It can scarcely, however, be denied that the postural treatment not only aids greatly in the reposition, but that clinically it is an efficient and practical

means of accomplishing that result. Moreover, his plate would seem to show that gravity without the volsella or other means certainly would do nearly all that Campbell and others have claimed.

To the anatomist the plate affords an excellent means of study of the relations of parts of great interest; and the bibliography appended is a commendable feature which every writer of a monograph should imitate.

W. W. K.

ART. XXXVIII.—*The Structural Anatomy of the Female Pelvic Floor.* By DAVID BERRY HART, M.D., F.R.C.P.E., Assistant to the Professor of Midwifery in the University of Edinburgh, etc. 4to. pp. 42, with 26 Figures and 2 Plates. Edinburgh: Maclachlan & Stewart, 1880.

ALTHOUGH in time the publication of this book antedated Prof. Simpson's, yet as the work of his pupil and assistant, and as correlated to his own, it may properly follow it. Nor need the teacher be ashamed of the pupil. If this be a sample of what he may do in the future, there is much good stuff in him. It is a graduation thesis which well deserved the gold medal and the Syme Fellowship which it won.

The author studies, first, the closed female pelvic floor in vertical mesial section (or, we much prefer to say, "sagittal," since "vertical" is indefinite), and coronal mesial section; secondly, the pelvic floor opened up naturally by labour and by the genu-pectoral posture; thirdly, its pathological displacements in prolapsus uteri (or, as he calls it, "sacro-pubic hernia"), and in instrumental hauling down of the uterus, and then the bimanual exploration of the pelvis, the artificial opening of the pelvic floor by specula, and, finally, its artificial support by pessaries.

His Anatomy has relation not only to structure but also to function. He differentiates the pelvic floor into a "pubic" and a "sacral segment." The line of division is the axis of the vagina. The pubic segment is loose in texture since the bladder and post-pubic fat are its chief constituents, and loose in its bony attachments, and can be displaced upwards as in labour, or downwards as in prolapsus uteri and in the genu-pectoral posture; while the sacral segment is firm in its texture, for it is made up chiefly of the perineum and the firmly closed anus and its sphincter, can be driven down as in labour, but remains in position in prolapsus (except the posterior vaginal wall), and also in the genu-pectoral posture. Three "lines of cleavage," he also draws attention to, viz., the vaginal, rectal, and recto-vaginal, *i. e.*, midway between the two. The first divides the pelvic floor into its two segments as above, and is the physiological line of cleavage; the second limits the displacements in the bimanual examination, and is the instrumental line of cleavage; the third differentiates the displacements in prolapsus, and is the pathological line of cleavage, names which, while we may take exception to them (especially the "instrumental"), yet we must see their value in the specific applications thus made.

In one thing we are glad to see he is no uncertain watchman. The uterus is not suspended by the ligaments to any valuable extent, nor supported by the vaginal walls alone, but "rests on the compact unbroken pelvic floor." His plates, presumably made from frozen sections, though he does not say so, thoroughly sustain the idea, and the results of lacerations of the perineum corroborate it.

W. W. K.

ART. XXXIX.—*La Syphilis: son Histoire et son Traitement.* Par le Dr. JAMES TARTENSON.

Syphilis: its History and Treatment. By Dr. JAMES TARTENSON. Second edition. 8vo. pp. 238. Paris: J. B. Baillière et Fils, 1880.

THE author of this work announces himself at the very beginning as an anti-mercurialist, and asks why all do not reject a remedy which is recognized to be dangerous and have recourse to a plan of medication which offers an incontestable superiority—that is the "*tonic*" method? The answer he finds is that the force of authority and the influence of the temporary effect of mercury upon secondary eruptions are, to many practitioners, irresistible. Relapses, however, so constantly follow mercurial treatment that he considers the roborant or tonic method far better, which he claims effects cures in periods varying from six months to a year, and is not followed by relapses.

With this declaration of principles he proceeds to consider his subject systematically. Taking up first the origin and history of syphilis, he dismisses the notion that it originated in America, and was transplanted thence to Europe, asserting that there are records of its existence 1700 years before the Christian era. In support of this he refers to a book by Captain Gardy,[1] published in 1863, entitled "*La Médecine chez les Chinois.*" He gives also an interesting tradition of the seduction of the wives of certain worshippers by the Hindoo god Siva, for which he was punished by a fire falling upon his genitals and separating them from his body. This tradition asserts that Siva, enraged by his sufferings, transmitted his affliction as a disease to mankind. Tartenson thinks the Jews became the victims of syphilis from cohabiting with the Moabitish women, and Job and King David to have referred to this disease in their laments. He follows the history of syphilis down through the times of the Greeks and Romans, and claims that the researches of Abbé Brasseur de Bourbourg prove beyond a doubt, from original documents in the language of the inhabitants of the valley of Anahuac, that syphilis existed here long before Columbus crossed the Atlantic. This statement gives some confirmation to the claims of Professor Jones that he has found syphilitic lesions of the bones dug up from ancient burial mounds in certain Southern States.

Some of the evidence cited in the book before us is vague; some is preposterous—that about the Jews, and Job, and David, for example—and some not to be hastily rejected. The truth is, the means for deciding upon the existence or non-existence of syphilis before the year 1494 are not yet sufficient to warrant great positiveness on either side of the question.

What happened at the end of the fifteenth and the beginning of the sixteenth centuries, the author narrates graphically, attributing the great outbreak to other diseases in addition to syphilis, with which, in the general alarm, they were confounded. Under the head of subsequent epidemics, he cites several that are probably incorrectly named. Certain it now seems that the radzyge, of Sweden and Norway, and the yaws, of Africa, are not syphilis.

In speaking of the geographical distribution of the disease, we have figures that would be alarming to the last degree, if we did not know the general unreliability of almost all statistics, and the special unreliability

[1] Called Capt. Dabry, in some books on Venereal Diseases.

of statistics made up from reports of army medical officers and boards of health, digested and analyzed by one who looks upon the simple venereal ulcer—the chancroid—as syphilitic. The world is not in danger of being depopulated by syphilis, as one would suppose from hearing persons like the author talk. On the contrary, syphilis is dying out, and the span of life is constantly growing longer.

When speaking of syphilis in France, Dr. Tartenson shows his attitude toward the so-called regulation of prostitution, in saying: "Although prostitution is strictly regulated in France, syphilis is very common there, which is one of the best arguments in favour of the partisans of a complete reform of the regulation, which is as opposed to the principles of public morals, and of the respect for individual liberty, as it is useless, regarded from the point of view of its sanitary results." Syphilis, the author tells us, is found everywhere, except in Iceland, the Faroe Islands, and the centre of Africa, where no case is seen except occasionally an imported one. The inhabitants of the northern countries of the continent of Europe suffer with very severe forms of the disease, which may be due to their habit of rarely changing their clothes or washing their bodies.

The chapter on the nomenclature of syphilis is very curious and entertaining, giving a variety of names that are not to be found in any other single book.

The chapter on the nature of syphilis differs little from what one finds in every book on this subject. A sensible distinction is made between contagiousness and inoculability, the initial lesion is ably described—though, we think, with too strong an implication that it is always more or less ulcerated—and it is stated that occasionally the initial lesion may be a squamous or mucous patch, and not a chancre. The period of incubation is correctly defined, and no intimation—in this place—conveyed that, until remote signs appear, the disease is local.

Entering upon the question of unicism and dualism, the author claims that hard facts support the former of these theories, that inoculation from a chancroid may produce syphilis and that from a chancre produce none, but only a chancroid. It is incomprehensible to us how the advocates of unicism—of whom there are few enough, nowadays—insist upon classifying chancres and chancroids according to their physical appearances alone, and fail to see the conclusive force of the fact that there never was an initial lesion of syphilis, whatever its appearance, that was not derived from an individual who then or afterward showed general symptoms of this disease; and, conversely, that never has anything but a local lesion been derived from an individual, who did not then or afterward have remote manifestations. On page 71, the author says Auzias-Turenne has seen induration develop after several successive inoculations, made with the pus of a simple chancre (chancroid), in the arm of one of his subjects. He then cites seven conclusions of Melchior Robert, all of which are purely negative, except the one just referred to, which he includes. This, as will be seen, shows no evidence whatever of a syphilitic infection from inoculation with non-syphilitic virus: a local induration, which might be occasioned by any irritating matter, being the only symptom noted. The other conclusions only indicate, what every one knows, that a lancet may be charged from a lesion on a syphilitic and fail to inaugurate syphilis. The same is true, thousands of times, of inoculations from the pustule of vaccinia.

We may not follow these questions further. The author's arguments

are ingenious, though we think them fallacious; his conclusion is that the initial lesion of syphilis (chancre), and the simple venereal ulcer (chancroid), are caused by the same poison—to which we are diametrically opposed.

In regard to prognosis, Tartenson agrees with almost all modern syphilographers in stating that syphilis is a very curable disease. The use of mercury he thinks retards recovery, tending to suppress secondary manifestations, but to promote tertiary lesions.

Hereditary syphilis receives due attention, after which the matter of treatment is taken up. We may not dwell upon the full history given, and the argument against every other method than that which the author advocates, namely, the tonic or "*reconstituante*," as he calls it. By this he asserts that he has radically cured, in from three to six months, 240 out of 246 cases that he treated from the beginning. The majority of these he has had under observation for at least eight years. The six cases not cured in so short a time were cured in about three years. In 183 cases, first seen after secondary symptoms had appeared, the results were analogous to the first set, but required from eight to twelve months. Of 640 patients who had previously taken mercury, about 150 were cured after two or three years of tonic treatment. The rest showed, from time to time, evidence of persistence of the diathesis.

Owing to the fact that Tartenson is a dualist, we must suppose that a large proportion of his cases were not what we would call syphilis. Yet it is to be noted that he observed in many of the first class of cases—those treated purely by the tonic method—erythema, or a papular syphilide, but nothing afterward. Cervical lymphangitis was present in almost all cases, mucous patches were rare, and in the majority of cases there was no falling of the hair.

The "*traitement reconstituant*" comprises careful hygiene, nourishing food, abstinence from strong coffee, tea, and alcoholic liquors, moderate exercise in the air, avoidance of fatigue, early retiring and rising, frequent baths, very warm garments to provoke sweating, and continence. The medication consists of drugs that resist the disintegration of the blood corpuscles: potassio-tartrate of iron, the black oxide, the sub-carbonate, the iodide, reduced iron, and cinchona. The chancre is to be cauterized with the hot iron—preferably with the thermo-cautery—and dressed with water and aromatic wine, or the latter alone; no ointments should be applied. If a bubo suppurates, it should not be freely opened, but a fine seton should be passed through it—a plan which has worked well in our own hands. For the wandering pains of early syphilis the author recommends opium, chloral, and chloroform; for gummy tumours the iodide of potassium; and the same for osteocopic pains.

The author quotes, with endorsement, Ricord's opinion that the chancre is at first but a local lesion, and that if it can be early destroyed, the syphilis is "killed in the germ." He has himself tried cauterization but finds it disappointing; excision he thinks impracticable. He recommends, however, electrolysis; trusting to its chemical action to so alter the poison as to render it ineffective. How much weight is to be attached to his experiments may be judged from his statement that he was successful in some cases in which *no induration had appeared;* and that, before treating the chancre, he inoculated the patient from it, *with negative results.* This strikes us as an example of the customary logic of the dualists.

The concluding chapter is on prophylaxis, and contains some excellent

suggestions. The portion devoted to personal preventive measures is very curious, regarded from an American standpoint. Of the "condom," he says: "*C'est, suivant la définition d'une femme d'esprit bien connue: une cuirasse contre le plaisir et une toile d'araignée contre le danger.*"

In conclusion we would state that we regard this book as one of great merit. It exhibits a thorough acquaintance with the French literature of syphilis, and no inconsiderable knowledge of English views in regard to it; while on the other hand, there is scarcely a reference to any German author—we cannot now recall one. We have noted as we went along our dissent from the author's opinion that the simple venereal ulcer is syphilis, and, with this exception, we have no hesitation in strongly recommending his work to all syphilographers. C. W. D.

ART. XL.—*Grundzüge der Physiologie des Menschen mit Rücksicht auf die Gesundheitspflege.* Von JOHANNES RANKE, Dr. Med. und Professor an der Universität zu München. Vierte umgearbeitete Auflage. 8vo. ss. xxv. 1065. Leipzig: Wilhelm Engelmann, 1881.

THIS thorough work on Physiology, which the author modestly terms "Outlines of Human Physiology," supplies in a great measure a want which has been too often used as a reproach to modern physiology. It attempts, and with a very decided degree of success, to apply the immense number of facts of the most advanced physiology to the needs of the practising physician.

Physiology now covers such vast fields of research that it is gradually becoming more and more separated from the art of medicine and growing into an abstract science cultivated for its own sake. This divorce of physiology from practical medicine, which cannot be too much regretted, is, we think, to be explained on two grounds: In the first place, our most eminent physiologists are not physicians, and in many instances have not even a medical degree; they, therefore, study the science as entirely apart from the art which should rest upon it, leaving to others the application of their results to practical ends. On the other hand, physiology has fallen into an undeserved discredit, from the attempt of practical men to apply its facts without any sufficient knowledge of their bearing.

As an instance of this, it is only necessary to mention the old controversy as to the action of mercury on the liver. Physiological experiment has proved over and over again that mercury exercises no influence in increasing the secretion of the liver. Experience has, on the other hand, clearly enough defined a condition of intestinal disturbance which is relieved by the traditional blue pill and salts. Here we have two facts, the one physiological, the other empirical, and resting on these facts two theories: the one, a so-called physiological theory, that mercurial remedies are useless; the other, that mercury is beneficial by increasing the secretion of bile. Both are demonstrably false, yet this is an instance which is often given of the injury done by physiological theory to practical medicine, while it is simply an example of the conclusions drawn by practical men, and not physiologists, from physiological facts.

In the author of the book under consideration we have a physician, and at the same time an eminent physiologist, and there is not a section in his book which does not show his entire familiarity with both sides of

his subject, and his ability to draw reliable practical conclusions from physiological data.

The book is written with the sole object of supplying the physician and medical student with a reliable text-book, and we know of no work which fulfils its mission better. The book is divided into three parts. In the first under the heading of General Physiology is described the physiology, chemistry, and physics of the animal cell, including the origin and development of tissues (embryology). The first section of Special Physiology is occupied with the study of nutritive changes, the subject of food being first discussed in a most exhaustive manner, and as thoroughly as could be expected in a monograph on the subject. The remainder of the section deals with the laws of nutrition, with which are included some interesting experiments on the nutritive value of different diets, the digestive changes in the food, and the mechanics of digestion and absorption. The second section of this part deals with the blood and its circulation, and the third with secretion, under which respiration is considered. Under the next division concerning the Liberation of Energy are considered the subjects of animal heat, the movements of the skeleton, voice and speech, and the mechanics and chemistry of muscle. Animal electricity and the special senses are next dealt with, and then the central nervous system and generation.

The work contains a copious index and table of contents. One feature of the latter is the collection of more than two pages of indices of all the paragraphs relating to practical hygiene, such as the effects of atmosphere and climate on health, the relations between what Darwin would term the *environment* and health, etc., and a similar index to the description of the most important physiological and chemical manipulations described in the text. R. M. S.

ART. XLI.—*Lectures on Diseases of Bones and Joints.* By C. MACNAMARA, F.R.C.S. Eng., Surgeon and Lecturer on Surgery at the Westminster Hospital, etc. Second edition. 12mo. pp. 551. London: J. & A. Churchill, 1881.

THIS work, which was reviewed in this Journal two years ago, has been partially re-written, and is increased in size by the addition of chapters, or lectures as they are called, on the diseases of special joints. Hence little need be said at the present time, except to reiterate the statement that there is much of practical interest in the volume, though at times the continuity of the text is broken by the insertion of clinical histories that add little to the merit of the author's work. The consideration of joint affections is thorough, and shows that the writer has drawn inspiration from his own hospital experience. The division of synovitis into serous, *muco*-purulent, and purulent is scarcely, however, in accordance with the usually received nomenclature. He treats many of these cases by applying extract of belladonna ointment and encircling the joint with cotton, over which he applies an elastic bandage. In some instances a splint is then adjusted to prevent motion. Suppurative synovitis is managed by free incision and drainage, which is now fully recognized by all practical workers as the proper method of treating such serious conditions. It seems proper to criticize his definition of chronic

osteo-arthritis, or rheumatic gout; which he styles a hybrid in which gout and rheumatism are combined (p. 386). The term rheumatoid arthritis, so generally used, is a good name for the disease, which has little pathological relation to either gout or rheumatism, except in location. In coxalgia he often favours myotomy, and in long-standing cases at times drills into the joint through the trochanter and neck of the femur for evacuation of the synovial contents. In pulpy degeneration of joints, he states (p. 380) that not a few cases may be cured with anchylosis by destroying the diseased tissue by incision and chloride of zinc. This is better than amputation. At the end of the book proper he has inserted two appendices, giving histories of a case of epiphysitis and septicæmia, and a case of wound of the perineum followed by septicæmia. These histories, though interesting in themselves, are out of place, and would be better placed in some current medical journal. J. B. R.

ART. XLII.—*A Treatise on the Materia Medica and Therapeutics of the Skin.* By HENRY G. PIFFARD, A.M., M.D., Professor of Dermatology, Medical Department of the University of the City of New York, etc. 8vo. pp. 351. New York: William Wood & Co.

THIS volume forms one of the series for the current year of *Wood's Library of Standard Medical Authors.* It is divided into two parts as indicated by the title. Under the head of materia medica, an alphabetical catalogue is given of those drugs which are stated by authors to exert a direct or indirect effect upon the skin. By an ingenious system of references the reader may ascertain the officinal name of the drug, its origin, and its effects upon the healthy skin following ingestion and local application; the cutaneous affections in which the drug has been found curative or useful when administered internally, and those in which it has proved useful when locally applied; also the authorities for the statements made.

The second part is essentially a treatise on skin diseases with the treatment strongly accentuated, and the other points lightly touched upon. In addition to the treatment by drugs this section also includes reference to electricity, and to the various mechanical methods, scarification, puncture, scraping, etc., commonly employed in the treatment of skin diseases.

Dr. Piffard's well-known therapeutic versatility and ingenuity have never been more favourably displayed than in the volume before us. It is rich, not only in the knowledge accumulated by others, but in that which is the fruit of the author's personal experience, and is likely to be highly valued by the specialist who is best able to perceive and appreciate its true worth. That its value will be equally great to the general practitioner we are inclined to doubt: not because all that he needs is not to be found in the book, it is equally to be found on the apothecary's shelves, but because he has not the requisite skill to use the weapons provided for him. As yet the knowledge of the dermatologist is far in advance of his brother practitioners in his chosen specialty. But in the nature of things the specialist must in time accomplish his own extinction. When his pioneer-efforts shall have made the road easy and plain, and shall have cleared away the rubbish accumulated by the "all-around man" of the last age,

then his successors shall take possession of a well-ordered domain of knowledge, easily comprehensible, and to be mastered as part of an ordinary medical education.

To this end such books as that of Dr. Piffard certainly, though indirectly, tend. It is valuable because it collects into methodical arrangement the numerous facts hitherto scattered through a multitude of not easily accessible books and journals. But let the uninstructed in dermatology beware of pitfalls. Not every drug warranted as "good for" a given disease will be found to cure it in practice, and many are the *ignes fatui* scattered through the pages before us. Our advice to the reader is to read it with care, and to select and make use of all that he can assimilate.

Ist nur was du verdauen kannst,
Dass ist das Räthsel deines Lebens.

A. V. H.

ART. XLIII.—*A Manual of Diseases of the Eye and Ear, for the Use of Students and Practitioners.* By W. F. MITTERDORF, M.D., Surgeon to the New York Eye and Ear Infirmary; Ophthalmic Surgeon to Bellevue Hospital, Out-patients' Department. 8vo. pp. 445. New York: G. P. Putnam's Sons, 1881.

A FEW years back little or nothing was done for the enlightenment of the general practitioner on the subjects of the diseases of the eye and ear, but, at the present rate of production, he is likely before many more years have passed to find his chief difficulty, particularly as regards the eye, in an *embarras des richesses*. The present treatise, among other advantages, offers that of including both subjects in one volume. Barring some evidences of haste, the author has done his work well. The anatomical descriptions are clear and sufficiently full, the descriptions of pathological conditions are excellent, and the directions for treatment are practical and sound. The book will be found a safe and valuable guide, and the practitioner who knows all that it contains will not often find himself at a loss in the care of this class of affections.

In the selection and arrangement of his matter, the author has been very fortunate, but his manner of presenting it is not always unexceptionable. There is an unusual number of grammatical oversights and ambiguous sentences, which will no doubt be corrected in the leisurely revision of a second edition. Other inaccuracies are rare and generally unimportant. On page 318 the explanation of the visual angle is quite unintelligible, and the loose statement is made that an angle of at least 5° is required for distinct vision. Snellen's test-types are constructed on a basis of 1°, which is the size of the limbs of the letters at their specified distances, the height of the letters being five times the width of their limbs.

The ophthalmic division of the book is illustrated by a number of admirably executed coloured plates from Sichel and Liebreich. The latter would be more valuable if they were accompanied by descriptions. Several of them are even entirely ignored in the text; while the plates from Politzer, which the preface assures us "will be found of great service in the study of the diseased conditions of the drum-head," are, in point of fact, not found at all.

The mechanical execution of the work is excellent, and the book presents an unusually attractive appearance. G. C. H.

ART. XLIV.—1. *A Pocket Atlas of the Descriptive Anatomy of the Human Body.* By J. N. MASSE, M.D., Professor of Anatomy, Paris. *Translated from the last Paris edition, and edited* by GRANVILLE SHARP PATTISON, M.D., Professor of Anatomy in the University of New York, etc. 8vo. pp. xxii. and Pl. 112, with Explanatory Text. New York: Harper & Bros., 1845.

2. *Anatomical Plates arranged as a Companion Volume for "The Essentials of Anatomy"* (by WILLIAM DARLING and A. L. RANNEY), *and for all works upon Descriptive Anatomy, comprising four hundred and thirty-nine designs on steel* by Prof. J. N. MASSE, *of Paris, and numerous diagrammatic cuts selected or designed by the Editor, together with Explanatory letter-press*, edited by AMBROSE L. RANNEY, A.M., M.D., Adjunct Professor of Anatomy in the Med. Dept. of the University of the City of New York, etc. 4to. pp. xvi. and Pl. 124. New York: G. P. Putnam's Sons, 1881.

WE have given the above title-pages very nearly in full in order that our readers may compare them, and the claims put forth in them by the respective editors. Both are professedly American editions of Masse's well-known "Petit Atlas d'Anatomie," first published in 1843, with a second edition in 1844, which Professor Pattison did actually "translate" and "edit" in 1845. It may be worth our while to examine and compare the two in some detail.

So far as the title-page is concerned, Dr. Ranney's differs from Dr. Pattison's only in two particulars, viz., that Professor Masse is pushed into the background and Professor Ranney into the foreground, and that the latter has added "numerous diagrammatic cuts." These last consist of twelve plates (the title of one of which, Plate No. 100, is omitted from the list of plates) with cuts selected mostly from Wilson, Séguin, and others. The few he has designed add but little to the value of the book, and in at least one instance the cut is precisely wrong. In Pl. 117, fig. 1, representing the optic chiasm, each optic tract is made to supply the retinæ from the entrance of the optic nerve, right and left, *i. e.*, in the right retina the left optic tract, for instance, will supply more, and in the left it will supply less than one-half of the retina. The fact, however, is that each optic tract supplies mathematically the corresponding half of each retina, the line of division passing not through the optic nerve, but through the macula lutea.

But it is when we compare what Dr. Ranney has *not* supplied that our astonishment is most excited. The fact, in plain English, is simply this: Dr. Ranney has taken the stereotype plates of Dr. Pattison's edition of Masse and has reproduced from them text, plates, editor's preface, author's preface, notes, everything as his own, without the slightest allusion to Dr. Pattison in any way. Let us see the proof. We say he has taken the same stereotype plates, because they correspond in size, and the text is the same, line by line, and word by word with a few and utterly insignificant stars and foot-notes. Where, in Dr. Pattison's edition, there is a change of type to fit the page, Dr. Ranney's shows the same change; nay, even more, where, in the one, there is a broken letter, or one of a wrong font, it is reproduced in the other.

The "editor's preface" of the later edition reproduces that of the former, almost without change. In the Harper's edition it is called a "Pocket

Atlas." In Putnam's the "Pocket" is omitted, for the book is doubled in size, and there is no allusion to any colouring of the plates, since there is no coloured edition as there was of Harper's. Each editor "has felt the want of such a work to recommend to his pupils;" the large size of most atlases, "in the opinion of the editor" of each book, "is a great objection against their use." Both editors thought they "could improve the original text of Masse by re-writing the descriptions of the plates," and both alike gave it up after trying it. Both "consider the execution of this work as a proud trophy to the arts of the United States." Each editor admires the liberality of his respective publisher, and has "no doubt it will be met with corresponding support and patronage." And we have no doubt that each has an opinion on the propriety of publishing over again another man's book as his own, although we do not find it recorded in either preface—possibly because their opinions on this subject, strange to say, may not be identical.

The "introduction" ("preface" in the Harper's edition) is the same, *verbatim et literatim et punctuatim*, with neither addition nor subtraction.

The plates have been needlessly re-arranged, and not only needlessly, but badly. Thus Dr. Pattison's edition presents us with the separate cranial bones in the first three plates, and the fourth is the "cranium in general." Dr. Ranney interpolates this plate as number two between the "frontal and parietal," and the remaining cranial bones. Moreover, in Dr. Pattison's edition plates 39 to 42 are really plates on aponeurology, whereas, in Dr. Ranney's, they are so transposed that, while the heading to each plate is correct, the table of contents gives the Fasciæ of the Abdomen under "Myology," the Fasciæ of the Extremities under "Splanchnology," and the Deep Muscles of the Leg and Foot under "Aponeurology."

Perhaps the most glaring blunder is to be found in Dr. Ranney's plate 41. When one is intent on editing another Editor's book after the fashion of this present work, it is judicious to edit the other man out before editing one's self in; not to do so is a piece of forgetfulness which is sometimes strikingly unwise. In a foot-note to plate 38 of Dr. Pattison's book, speaking of the "Adductor Pollicis Pedis," he says: "This is called by Cruveilhier the Abductor Pollicis, but, for the reasons stated in the note which may be referred to in *the Editor's Edition of Cruveilhier's Anatomy*, p. 288, we give it the name which," etc. The foot-note to plate 41, in Dr. Ranney's edition, also refers to *the Editor's Edition of Cruveilhier's Anatomy*. Now, in 1844, Dr. Pattison did edit Cruveilhier's Anatomy, and the Harpers published it; but this is the first intimation that Dr. Ranney's editorial labours, like his editorial opinions, are so completely identified with those of Dr. Pattison.

While writing this notice we have received a printed circular from Messrs. G. P. Putnam's Sons, stating that, "through a clerical error, the name of the late Prof. Granville Sharp Pattison, as Translator and Editor of the edition of Masse's Anatomical Plates, issued in 1845, has been omitted from the title-page of their present edition. They would also explain that Prof. Ranney's labour, as Editor, embraced such alterations of the Plates and Text as was required to bring these fully up to date, together with the preparation of important new material in the way of diagrams and descriptive text." A most remarkable "clerical error" this, to escape the eyes of the publisher, the editor, the proof-reader, and the type-setter!—especially when the old stereotype plates were before them. Perhaps, too, it was a "clerical error" which changed the date of the editor's preface from "Univer-

sity of New York, Oct. 20, 1845," to "156 Madison Ave., Feb. 15, 1881." Perhaps, too, it was a "clerical error" which makes Dr. Ranney, in the two paragraphs that he in fact does add to the editor's preface, refer three times to "the Editor," meaning really himself, but in no wise distinguishing such references from those to "the Editor" in the other paragraphs, meaning Dr. Pattison. As to "alteration of the Plates," we have not found any, and the text, as we have pointed out, has not been altered enough. Such an explanatory circular, under these circumstances, becomes self-convicting. W. W. K.

ART. XLV.—*How to Use the Forceps, with an Introductory Account of the Female Pelvis and the Mechanism of Delivery.* By HENRY G. LANDIS, A.M., M.D., Professor of Obstetrics and Diseases of Women and Children in Starling Medical College. 12mo. pp. 168. New York: E. B. Treat, 1880.

THE work under review is divided into two parts of about equal length; the first, preparatory to the second, on the mechanism of labour; and the second, on the forceps. The author regards the instrument as an assistant to nature's process, and as such, to be used so as to correspond to the normal method of delivery; to succeed in which, it is important to understand fully the true mechanism of labour as exhibited in natural deliveries of the head. Dr. Landis regards the pelvis in the somewhat novel light of a double conduit, ending in a single exit, and exhibits his views by diagrams, showing the superior strait to be virtually divided into a double entrance, each door of which has an oval form, and is adapted to the admission of the fœtal head, when both are in proper proportion, and the head enters in a correct position. This cordiform character of the superior strait, divisible into two convergent and intercommunicating ovals, permits of a considerable unilateral and postero-lateral deformity of the said strait, without necessarily impeding labour to any marked degree, as there will still remain an oblique oval through which the fœtal head may pass. In such a pelvis, the body of the fœtus, which enters by the other oblique oval, may be impeded for want of space for the passage of the shoulders, which will be forced to rotate to obtain it.

Dr. Landis, having been educated in this city, follows the views of its professors in recommending the use of the Davis forceps, and its modifications, having oval fenestræ, and applying the same to the sides of the child's head. He opposes the oscillatory method of traction, and recommends that the line of force should be made to follow that which the head passes through, when its exit is accomplished by the *vis a tergo*. The student should understand fully the mechanism of labour, and he will then be prepared to aid nature, and avoid any antagonistic movements with his forceps.

The work is well worth a careful perusal on the part of the profession.

R. P. H.

ART. XLVI.—*A Practical Treatise on Diseases of the Skin.* By LOUIS A. DUHRING, M.D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania, etc. Second edition, revised and enlarged. 8vo. pp. 644. Philadelphia: J. B. Lippincott & Co., 1881.

THE revised and enlarged second edition of this work, whose previous issue greatly commended itself to the profession, appears with emendations and additions which largely enhance its practical value. The too-prevalent fashion of preparing second editions of a work for the press, has here evidently found no favour. Those who have had reason to know the conscientious and scrupulous care with which the author has devoted himself to the other labour he has set before him, will be prepared to find in these pages a further proof of the excellent quality of his work.

Respecting the more frequently occurring diseases of the skin, the special excellence of this volume has long been recognized, in the accuracy of its definitions, in the simplicity and fidelity of its clinical histories, in the absence of untenable theories and of an intolerably redundant nomenclature, and in the value of the therapeutic measures recommended both with a view to general and topical treatment. Naturally, in none of these particulars does the new edition fall short of the excellence of its predecessor. We look over its leaves and find them laden with the fruit of a ripe experience—a wise discrimination between observation and theory, and a comprehensive familiarity with the literature of each subject presented.

As regards the diseases of less frequent occurrence, those which more commonly fall under the observation of the expert, we find that the chapters on dysidrosis, and pomphylix, hæmatidrosis, scleroderma, morphœa, atrophia cutis, hypertrophy of the hair, atrophy of the hair, scrofuloderma, syphiloderma, and carcinoma have been those chiefly enlarged by important additions; and it is worthy of note that on those subjects, the contributions of the author to current literature have been in many cases of the greatest value.

The new articles all embrace subjects of special interest to Americans, as the rare diseases to which the attention of the reader is called are yearly of more frequent observation here, probably not because they are of increasing frequency, but because the labours of American dermatologists have directed such attention to them that they are more frequently recognized. It was said of Thoreau, by Mr. Emerson, that he expected one day to see the *Victoria regia* growing in the vicinity of Concord, and certainly the number of cutaneous diseases recognized abroad and hitherto supposed to be of the greatest infrequency in America, is rapidly diminishing. The new descriptions found here, relate to uridrosis, phosphorescent sweat, urticaria pigmentosa, dermatitis circumscripta herpetiformis, pityriasis maculata et circinata, dermatitis exfoliativa, dermatitis papillaris medicamentosa, dermatitis gangrænosa, dermatitis capillitii, fungoid neoplasmata, tuberculosis cutis, podelcoma, ainhum, perforating ulcer of the foot, and myoma cutis.

Doubtless there are those who will glance through a list of these names and be conscious of a sensation of dismay. The terms are many of them unfamiliar to the fairly well-educated physician. The subjects to which they refer are to him of small practical moment, he may conclude. Pos-

sibly he will dismiss the whole with a too common reflection, that dermatology is wedded to its cumbrous nomenclature and mysterious refinements above the level of the average intelligence. It is worth while to consider this reproach for a moment.

For it is a reproach which has not lacked public expression. The annual meetings of the American Dermatological Association have been criticized in our medical journals, in consequence of the time thus spent in discussion of rare forms of cutaneous disease; and it is sufficiently common to hear medical men of position and education admit their ignorance of the general subject of skin diseases, attributing this to the large number of rare forms of such maladies and the confusion existing with respect to their designation.

Now without stopping to charge these sins of nomenclature upon all other departments of scientific labour, we cannot fail to remember that, especially of late years, the terms employed in chemistry and perhaps more particularly in connection with new operations upon the female genitals, have been of the most complicated and perplexing character; it is, however, needful to note that the newer terms employed by the dermatologist are those connected with distinct pathological processes or the objective evidences of such processes, while the others to which we have referred are more generally the terms demanded by the refinements of art, or by the requirements of exactness in technical expression. To know the rule in dermatology, one must know the exceptions; to be able to pronounce with precision upon the most common of diseases, one must be positive in the exclusion of every other. The exceptions, though rare, are visible alike to physician and patient, and clamorously assert their identity in their behaviour. They betray their differences also in public, and to the eye of the individual who is not consulted as to their nature. Again, it is always necessary to get rid of the doctrines respecting ghosts, before one is in position to discuss a fact of nature. To establish the fact of a new or rare cutaneous disease, one is placed under the necessity of clearing away an incredible quantity of rubbish.

Look for a moment at the title given here "Dermatitis exfoliativa." The other names mentioned by our author under this head, as employed by writers, are, "General Exfoliative Dermatitis," "Recurring Exfoliative Dermatitis," "Desquamative Scarlatiniform Erythema," "Recurrent Acute Eczema," "Acute General Dermatitis," "Recurrent Exfoliative Erythema," and "Scarlatiniform Exfoliative Dermatitis." Here unquestionably there is need of a single term, by which may be understood the varieties of exanthem described by such writers as Baxter, Féréol, Fagge, Pye-Smith, and, among Americans, by such writers as Bulkley and G. H. Fox. Our author might have added here, the names also of Guibout, of Paris, and Jamieson, of Edinburgh, had the recent papers of these last-named gentlemen appeared before the book went to press. Surely this is a subject requiring attention in a treatise devoted to the consideration of cutaneous disease.

Here, again, we find the evidences of our author's conservatism. He restricts the use of the term we have given, to certain unusual and occasionally grave forms of disease, characterized by an acute erythematous, more rarely vesicular or bullous, inflammation, localized or generalized, accompanied by a more or less marked febrile disturbance, accompanied or followed by varying degrees of desquamation or exfoliation of the epidermis, and marked by a tendency to relapse. The disorder he thus

describes is to be distinguished from the recognized varieties of eczema and psoriasis, and from pityriasis rubra and pemphigus foliaceus. But how are these distinctions to be established, especially in face of the fact, that "much diversity of opinion exists as to the true nature of the cases . . . . . and it is difficult to determine from the reports whether they illustrate the same process or different diseases." Difficult, indeed, it is; one is strongly tempted to disregard alike authorities and minor differences of fact under the circumstances, and to agree with Jamieson that the term "general exfoliative dermatitis" should be made to include the very diseases from which we are here told that the conditions included by that term should be carefully differentiated.

Now it is in just such periods, when our knowledge of the different phenomena displayed under different circumstances by a single pathological condition is widening and deepening, that a wise conservatism is requisite. True, there is a wide distinction between typical cases of pemphigus foliaceus, for example, where the dried contents of a collapsed bleb furnish the material of the papery flakes cast off from the surface, and that disorder characterized merely by "bullous inflammation followed by various degrees of desquamation of the epidermis with a tendency to relapse." Yet the evidences of the existence of intermediate forms between these extremes are not wanting, and Jamieson (*Edinburgh Med. Journ.*, April, 1880, p. 879) cites several cases which it would be exceedingly difficult to assign exclusively to the one category or the other. One such has also been reported by ourselves (*Chicago Med. Journ. and Exam.*, Feb. 1881), under the title Pityriasis Rubra, where there was coexistence of very extensive epidermal desquamation, with febrile accesses of fatal termination, and where the surface exhibited marble-sized projections, which were found, post-mortem, to contain a creamy pus, and which served to give a particular character to the malady. We are not yet ready for a distinct recognition of all these rare and severe cutaneous manifestations as members of a single family, and yet, if the signs do not fail, to that complexion we shall eventually come. Our author has wisely given us a provisional recognition of these typical states, under the title "Dermatitis Exfoliativa."

We could in this way go over all the interesting ground traversed here for the first time, by one well qualified to pronounce with decision at every step, but we must be content by reminding those who find it necessary to consult a treatise of this sort, of the importance to themselves of possessing a brief yet precise description of each of the rarer cutaneous diseases, especially when it is requisite to come to a diagnosis by the processes of exclusion. It is for these reasons that we take especial pleasure in commending Dr. Duhring's book to the practitioner as well as to the student of medicine, and it is probably true that the marked success of the first edition was based upon its value in just this particular. Of it can be said now, even more confidently than on its first appearance, that it is the best treatise in the English language on the subject of diseases of the skin. As a text-book, it stands without a rival, and as a monument to the author's painstaking and indefatigable industry, it is one upon which he can well be congratulated. It is the production of books like this, which has brought to the profession in this country a degree of recognition and respect abroad which we could not in any other way have attained, and it is this which has held up to our own countrymen a standard of literary excellence in authorship which has proved of inestimable value.

The new illustrations in the chapter on anatomy of the skin are very

creditable drawings by Dr. Van Harlingen, and serve well to exhibit the relations between the protoplasmic bodies in the mucous layer, formerly described as hanging together by spines or prickles at their points, and clearly shown by Heitzmann to be generally connected by a thread-like network of living matter, traversing the lifeless cement substance between the epithelia.

The typography of the book is beyond criticism, and in other respects the publishers have done their part in its production with a most commendable success. J. N. H.

ART. XLVII.—*Hernia, Strangulated and Reducible, with Cure by Subcutaneous Injections. Together with Suggested and Improved Methods for Kelotomy. Also an Appendix, giving a short Account of various New Surgical Instruments.* By JOSEPH H. WARREN, M.D., Member of American Med. Assoc. 8vo. pp. xii., 280. Boston: Charles N. Thomas, 1881.

THE full title of this work helps to give an idea of its contents and aim, the first of which is valueless, and the second apparently personal. Many books are written with the object of advancing the author's reputation, but in very few is that object so little concealed as in the volume before us. Sometimes there is associated with this selfishness of aim, intrinsic merit of greater or less amount; in this instance there is no such association, for we fail to see that surgical science gains the slightest addition from this book. The introduction is of interest as giving an account of the controversy between Dr. Heaton, the advocate of the boasted operation for the radical cure of hernia by injection, and the committee of the American Medical Association, a matter with which few of the present generation are familiar. Dr. Warren appears as the *quasi* apologist for Dr. Heaton, yet he fails to make out a case for him, and the impression left upon the mind of the reader is that the committee was right and Dr. Heaton wrong. It was simply the old story which has so often convulsed the ranks of the profession. Dr. Heaton practised an operation which he thought was of special value, and refused to make its steps or precise character known, thinking that by so doing he would increase his own emolument. As is so often the case, when the operation became known, it was found to be similar to one that had been before devised; Joseph Pancoast having resorted to injection four years before Heaton's first case, the only peculiarity of the latter's method being the substitution of an extract of white oak bark for the preparation of iodine used by the Philadelphia professor.

The author of this volume was made the recipient of Dr. Heaton's secret, and he valiantly endeavours to defend his actions on the score of youth and inexperience, with, however, very moderate success. But the history of this operation, and this old controversy, have served Dr. Warren a more important purpose. It has enabled him to come before the profession with certain trivial modifications of Heaton's methods, and, at the same time, to speak of his own "by no means small or limited practice," of his own "fine sense of touch and delicate manipulation." Altogether, there is a tone of immense superiority and acknowledged eminence (?) pervading the volume which may well induce the reviewer to hesitate be-

fore he criticizes, lest his criticisms be regarded as among "the rebuffs," and born of the "prejudice" which Dr. Warren, with rare foresight, anticipates in his opening sentence.

The body of the work consists of descriptions of the varieties of herniæ and of some of the operations devised for their radical cure. Dr. Warren prefers the operation by injection. The original contributions made by Dr. Warren, so far as the volume reveals them, consist of two; 1st, a modification of Heaton's syringe, the needle to which is flattened, and given a spiral twist, with the idea of facilitating its introduction; and 2d, a herniotomy knife, with a serrated edge, which can be guarded during its introduction. Dr. Warren is also inclined to think that he is the discoverer of the fact that torn arteries do not bleed as readily as those which have been cleanly cut, and, on page 240, he refers to one of his communications to the *Boston Medical and Surgical Journal*, where he details how he in the first place made traction upon certain bloodvessels and then divided them by a saw-like motion of the bistoury, and did not find it necessary to resort to ligatures! Before such an original observer, well may the reviewer hesitate to pronounce a judgment.

We feel that we have already taken up more than sufficient space by our notice of this book. The illustrations are quite numerous and very familiar, and many of them remind us of an instrument maker's catalogue. Dr. Warren's style is as marvellous as everything else about the volume, being involved and often ungrammatical in the highest degree. Of the printing and general style of get-up, it is enough to say that it is strikingly like the substance of the volume. S. A.

ART. XLVIII.—*Health Reports.*

1. *Annual Report of the Board of Health of the State of Louisiana for the year* 1880. New Orleans, 1881. pp. 354.
2. *Annual Reports of the State Board of Health of Colorado for the years* 1879 *and* 1880. Denver. 1881. pp. 134.
3. *First Biennial Report of the North Carolina Board of Health*, 1879–1880. Raleigh, 1881. pp. 201.

1. A LARGE part of the *Louisiana* Report is occupied with statements and opinions in regard to the outbreaks of mild yellow fever recorded in the *National Board of Health Bulletin* for October 9, 1880, and which Prof. Joseph Jones, with many prominent physicians of New Orleans, considered to be only a variety of malarial fever, known under the local name of "rice fever." This unfortunate dispute has already been referred to in our columns, and we would therefore simply remark here, that the obvious lesson from its occurrence is in the future to secure so prompt and thorough an investigation, by representatives of all parties interested, of any "suspicious cases," that either there shall be no doubt as to their nature, or the party in error shall be conclusively condemned by the whole country, on the evidence of *subsequent* events.

Prof. Jones contributes valuable papers in regard to the existence of leprosy, and of yaws in Louisiana and the other Southern States, in the West Indies and in Mexico. From these it appears that leprosy, which is now comparatively a rare disease, was so common in the Delta of the

Mississippi River a hundred years ago, that a special hospital for lepers was founded about 1785 in the rear of the city of New Orleans. Dr. Jones reports having observed in Louisiana about twenty cases of elephantiasis Græcorum, or Oriental leprosy; five cases of elephantiasis Arabum, and three examples of that singular and loathsome disease, introduced it is believed by the slave trade, African yaws. His account is illustrated by four plates representing the ravages of leprosy, and the practical conclusions in regard to the existence of this malady upon the Bayou Lafourche are, that a sufficient number of persons have been affected with the disease to render it the duty of the State sanitary authorities to provide for the establishment of special leper houses, and that since some of the cases appear to have been contracted from contact or contagion, the practice of introducing patients suffering with leprosy into the crowded wards of any large city hospital, should at once be discontinued.

Elaborate mortuary statistics, suggestions of sanitary measures requisite for improving the health of New Orleans, and detailed reports from district sanitary inspectors make up the remainder of the book.

2. The volume from *Colorado* comprises the President, Dr. F. J. Bancroft's address, with a short paper on ventilation and clothing by T. G. Horn, M.D., of Colorado Springs, which make up the report of 1879, and a number of valuable essays forming the report of 1880. Dr. H. A. Lemen, of Denver, contributes an article upon the nature, causes, and prevention of typhoid fever, which enters very freely into the subject, and is followed by the history of an epidemic of typhoid in Denver in which our knowledge of the causation of this fatal disease is intelligently applied to explanation of its origin (as so frequently met with elsewhere) in the pollution of drinking water by sewage. Dr. H. K. Steele furnishes a series of aphorisms upon sewerage and house drainage, which might be committed to memory by every plumber's apprentice with advantage; Dr. Bancroft advocates the advantages of Prof. H. R. Storer's admirable plan for sanitary protective associations; and Dr. Dougan gives us some valuable and original observations upon the influence of the Denver altitude (10,000 feet) upon the human organism. Among these effects Dr. Dougan enumerates a marked stimulation of the whole system and an increase of the chest capacity. He admits the unusual frequency and great fatality of pneumonia and some other inflammatory affections, but claims that this is more than balanced by comparative exemption from malarial and zymotic diseases, so that the average influence of the climatic conditions in Colorado is favourable to health.

3. The Biennial Report of the *North Carolina* Board records a praiseworthy effort of the physicians of that State to gain for their fellow-citizens the blessings conferred by due regard to the laws of sanitary science. These blessings, however, we regret to see, are but imperfectly appreciated since the philanthropic secretary, Dr. Thomas F. Wood, of Wilmington, has been compelled to generously advance out of his own pocket over four hundred dollars for necessary expenses, the pittance of two hundred dollars annually being of course lamentably insufficient. It is to be hoped that the eyes of the State authorities may soon be opened wide enough to perceive that "public health is public wealth," and that to secure the latter by the former, a liberal expenditure is the truest economy.

To a detailed account of the establishment of the Board, and its auxili-

ary county boards of health, is added a number of appendices giving instructions as to the method of making autopsies; information respecting drainage, drinking-water, disinfectants, etc.; and an elaborate article upon sanitary engineering. Little or no originality is claimed for these circulars, which, however, are useful compilations likely to prove of great value to those for whom they have been prepared. J. G. R.

ART. XLIX.—*Syphilis and Marriage. Lectures delivered at the St. Louis Hospital, Paris.* By ALFRED FOURNIER, Professeur à la Faculté de Médecine de Paris, etc. Translated by P. ALBERT MORROW, M.D., Physician to Skin and Venereal Department, New York Dispensary. 8vo. pp. 251. New York: D. Appleton & Co., 1880.

THIS book takes us back to the clinic rooms and the wards of the Hôpital St. Louis; and it is with the liveliest recollection of the earnestness and volubility with which the author used to enunciate "primo" and pass on to "secundo" that we find ourselves reading what once we caught as it fell from his lips. Yet, not exactly that; for the translator has not always hit the precise meaning of the writer, and more than a few times we find what sounded pathetic in France and in French to make a hard and disagreeable impression here and in English.

But, though there are many such infelicities, the substance of the original work is faithfully represented in the translation before us. This substance must now be pretty familiar to most of our readers, since abstracts of it have been very common of late in the medical periodicals. Fournier teaches that a man who has syphilis—not who has had it—may not marry; that a man who has been cured, as evidenced by an immunity from active manifestations for two years—may; and that if, by accident or wilfully, a man with an uncured syphilis marries, he must use the extremest measures to prevent the possibility of infecting his wife and begetting diseased children. An elaboration of these ideas and the statement of cases supporting them make up the most important part of the book before us. Incidentally other questions come up; as, for example, the still mooted one of paternal heredity. In regard to this, as is well known, Fournier believes a syphilitic father may impregnate a healthy woman, the fœtus being syphilitic and the mother remaining healthy. He also believes that such a fœtus, inheriting syphilis from its father, may, in utero, infect its mother, who thus becomes syphilitic "by conception."

The unreliability of sulphur waters, as revealers of latent syphilis, is now too well-established to need much further argument; but Fournier ranges himself positively against the old belief that they had some value as a test.

The book before us has a scientific value proportioned to the rare opportunities and fine talents of its author. Beyond this, it discloses, with the effusiveness characteristic of his countrymen, those qualities of heart which have made him not only the respected but also the popular teacher that he is. C. W. D.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

Flat-foot in Young Infants.

The period at which flat-foot begins in children is one about which many different opinions are held by those who have large opportunities of making observations on the subject. It was a matter of dispute at a recent meeting of one of the medical societies, some maintaining that in cases of genu valgum the flat-foot always precedes, others that it always follows, the affection of the larger joint. Professor VOLKMANN, in the sixth number of the *Centralblatt für Chirurgie* (February 12, 1881), moralizes at some length upon the subject in connection with a paper by Professor Küstner in a recent number of *Langenbeck's Archiv* (Bd. xxv. p. 396). He says that it is well known that C. Hüter originated the theory that the alteration in shape of the comparatively *supinated* foot of the newly-born infant into the more *pronated* form which is characteristic of the adult, is brought about by the pressure exercised by the weight of the body. The axis of the astragalo-calcaneal articulation is so situated that the act of placing the foot on the ground forces it into the pronated position, and, therefore, according to Hüter, the bones and articular surfaces become modified into corresponding shapes under the influence of the pressure thus exerted. If this theory were true, observes Volkmann, not only should children who do not learn to stand and walk at the proper time retain the infantile form of foot, but this condition ought to persist in healthy children until the period of standing and walking begins. But this is not the case. Even in the first months of life the foot begins to lose its fœtal form, and may have reached or even passed the normal adult shape before any attempt is made to put it to the ground. And it is also pointed out that in the not uncommon cases where a child, on account of disease or weakness, remains for fifteen or eighteen months without making any efforts at walking, we no longer find the fœtal form of foot remaining. It is by no means rare, again, to find an actual flat-foot developed before the end of the eighth or tenth month. Taking these facts into consideration, Volkmann gives up the theory propounded by Hüter, and concludes that under ordinary circumstances the body-weight in walking and standing has nothing to do with this change of shape so interesting to the surgeon, which, in his opinion, depends much more upon hereditary influence. He shows that in newly-born infants many, if not all, the bones have a different form from those of the adult, and that the change from one to the other

takes place more or less rapidly, but often quite independent of any such forces as those under consideration. Some changes, indeed, appear to occur in opposition to such forces—as, for example, the increase in the angle formed by the neck of the femur with the shaft and the hollowing out of the sole of the foot, which does not occur until the child begins to stand and walk. That the latter does really occur in opposition to the force exerted by the weight of the body is shown by the fact that in so-called "static flat-foot," which is obviously the result of this cause, the arch of the foot sinks at the same time that the eversion and abduction take place. The power, whatever it may be, which causes this arching of the foot may happen to be in excess of the counterbalancing force of the weight of the body, as is shown by cases of talipes varus and equino-varus, in which there is no greater mistake than to suppose that if the shape of the foot be sufficiently rectified to enable the sole to be placed flat upon the ground, the acts of standing and walking will be sufficient to retain the natural position. It is notorious that cases in this condition, if left alone, are almost certain to relapse. As to the special subject of flat-foot in young children, Volkmann attributes it to four principal causes: 1. Congenital, depending upon intra-uterine pressure. This form should be treated early and energetically. 2. That form which arises from a too rapid assumption of the adult shape of the foot. Treatment of this variety is invariably unsatisfactory. 3. Rickety flat-foot, which, though undoubtedly, as a rule, caused by the weight of the body, in some cases equally undoubtedly sets in before the child has made any attempt at walking. It seems, therefore, probable that the rickety process itself has an influence in determining the flattening of the plantar arch. 4. Paralytic flat-foot.

It will be noticed that Volkmann says nothing about the relation of flat-foot to genu valgum. We ourselves have been in the habit of looking upon the two conditions as occurring synchronously and independently as a result of the same cause. The question, however, does not seem to be one of very great practical importance. —*Med. Times and Gazette*, March 26, 1881.

MATERIA MEDICA AND THERAPEUTICS.

Action of Small Doses of Mercury upon the Lower Animals.

It was pointed out by Liégeois, upwards of ten years ago, that small doses of corrosive sublimate, administered during considerable periods of time to healthy persons, caused an increase in their body-weight. Keyes has published[1] some more recent investigations on the subject. He found that "small doses of mercury, continued for a short or a long period in syphilis, either alone or combined with iodide of potassium, increase the proportion of red corpuscles in the blood, and maintain them at a high standard. Further, mercury in small doses acts as a tonic upon healthy animals, increasing their weight. Lastly, it is a tonic in small doses to individuals in fair health who are not syphilitic. In such individuals, it augments the number of the red corpuscles." Setting out from these data, SCHLESINGER (*Archiv für Exp. Pathol. und Pharm.*, Band xiii. Heft 5) administered small doses of mercuric chloride to herbivorous and carnivorous animals for long periods of time, and arrived at the following conclusions. No ill effects were ever observed to follow the treatment, in either rabbits or dogs. It may be regarded as certain that the animals so treated gain in weight, and that their blood contains an increased proportion of red corpuscles. *Post-mortem*

[1] Amer. Journ. of the Med. Sciences, Jan. 1876.

examination showed no deviation from the standard of health; nothing, indeed, beyond an unusual accumulation of fat in those regions where fat is normally present. No increase in the amount of urea excreted was ever noticed; albumen and sugar were never met with in the urine. While thus confirming Keyes' facts, the author dissents from his interpretation of them. He does not think that we are justified in ascribing tonic properties to mercury administered after this fashion. The increased number of red corpuscles, together with the accumulation of fat, point rather, in his opinion, to some influence of an inhibitory kind slowly and continuously exerted by the metal upon the processes of oxidation going on in the body.—*London Med. Record*, May 15, 1881.

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Antipyretic Action of the Phenols.

Professor LICHTHEIM (*Breslauer Aerztl. Zeitschr.*, 1881, No. 1) regards the alarming symptoms observed by Jänicke during the use of resorcin as the result, not of the direct action of the drug, but of the rapid rise of temperature following the cessation of its action. Professor Lichtheim has made experiments also with the two other members of the dihydroxylbenzol group, hydroquinone and pyrocatechin, and also with phenol (carbolic acid), in relation to their antipyretic action when given internally. From these experiments, it appears that there is a distinct and concomitant parallelism between the antifermentative and antipyretic actions of these substances. In order of antipyretic doses, they stand as follows: phenol, 4½ to 6 grains; then hydroquinone, 12 grains; and pyrocatechin, 15 grains; weakest of all, resorcin, 46 grains. Owing to the fleeting reduction of temperature, and the subsidiary actions produced, Professor Lichtheim's opinion is that these drugs will not stand comparison as antipyretics with quinine and salicylic acid.—*London Med. Record*, May 15, 1881.

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Apomorphia as an Expectorant.

BECK concludes (*Deutsche Med. Wochen.*, Feb. 1881) that apomorphia is decidedly superior to ipecacuanha, antimony, and the preparations of ammonia, in the treatment of bronchial catarrh, whether of primary or of secondary origin. It should be given in the first stage of the disease, when the cough is dry, and only sonoro-sibilant rhonchi are heard over the chest. Within twenty-four hours free expectoration sets in, and bubbling crepitation takes the place of the dry sounds. In the broncho-pneumonia of children, it should be given during the stage of resolution, to promote the expulsion of the inflammatory products from the bronchi. In acute laryngitis, its usefulness is very doubtful. The following is the prescription employed by the author: Hydrochlorate of apomorphia, gr. j; dilute hydrochloric acid, ♏xx; syrup, ℥j; distilled water, ℥iv. Of this mixture, a teaspoonful may be given every hour to children between three and ten years of age. Adults may take a tablespoonful every three or four hours. Given in this way, apomorphia does not give rise to nausea, or disturb digestion.—*London Med. Record*, April 15, 1881.

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Intra-Peritoneal Transfusion.

To obviate many of the difficulties and dangers of intra-venous transfusion Ponfick has introduced a method of injecting defibrinated blood into the peritoneal sac, and has availed himself of the rapid absorption occurring from serous surfaces. His example has been followed by others, and KACZOROWSKI has recently published his results in the *Deutsche Med. Wochenschr.* He employed the method first in a case of puerperal septicæmia, and then in five other cases of anæmia

and extreme exhaustion. He injected from 250 to 500 centimetres, and in one case repeated the larger quantity. In one case only was there no substantial result. The local reaction of the puncture, which he recommends should be done under antiseptic precautions, he found to be very slight, and even the entrance of pure air to be harmless. He recommends that intra-peritoneal transfusion should be practised in cases of protracted fever where there is threatened paralysis of the heart, and also in chronic anæmia without fever.—*Lancet*, March 26, 1881.

MEDICINE.

Transfusion of Blood in a Case of Acute Typhoid Fever complicated with Intestinal Hemorrhage.

This case, reported by GIBERT (*Bull. de l'Acad. de Méd.*, March 29, 1881), was that of a patient attacked by typhoid fever, in the first instance without any special characteristics, which at the end of thirty-one days, suddenly manifested peculiar symptoms: first, a state of syncope, followed shortly after by great restlessn , at the moment when a small bloody evacuation appeared for the first time. In a fit of great excitement, the patient having got out of bed, and in the midst of the struggle to put him into bed again, evacuated *per anum* about 1500 grammes of coagulated blood, extremely fetid, evidently proceeding from a mesenteric artery. Delirium supervened, as well as such a state of weakness that believing death to be near, Dr. Gibert attempted during the course of the night transfusion of blood, an operation in which, in consequence of operative difficulties, he thought he could only inject from 25 to 30 grammes of blood. The general condition being rather more satisfactory, a second injection of 90 grammes of blood was performed the following morning. A sudden and lasting improvement showed itself immediately, of which the brain was the first to feel the effects; the heart beat normally, and the first sound became perceptible. Cardiac impulsion was felt, and the patient, aroused from his death struggle, was able to take nourishment. Convalescence soon set in, and the cure is at the present time complete. M. Gibert is uncertain whether this case of transfusion is exceptional and without value, from the point of view of general pathology, or whether it is a case which should guide the physician. Whenever the typhoid patient, especially when he has lost much blood, is in an organic incapability of living if the blood is not renewed, which is often the case—if at this moment the physician intervene by transfusion, he will more often than has been hitherto believed have the chance of saving life.—*London Med. Record*, April 15, 1881.

Diagnosis of Yellow Fever for Sanitary Purposes.

Dr. S. M. BEMISS, in an excellent paper read at the late meeting of the Louisiana State Medical Society (*New Orleans Med. and Surg. Journal*, May, 1881), laid down the following propositions which were unanimously endorsed by the society:—

I. For sanitary purposes the following groups of symptoms shall be considered to indicate yellow fever:—

Group 1st.—A person after (a) a sudden attack, has (b) a fever of one paroxysm, attended with (c) marked congestion or blood stasis of capillaries of surface, conjunctivæ, and gums; with (d) a history of probable exposure to infection, and (e) no history of a previous attack of yellow fever.

Group 2d.—A person after (a) a sudden attack, has (b) a fever of one parox-

ysm, followed by (c) unusual prostration, (d) albuminous urine, (e) yellowness of conjunctivæ, or skin, and having no positively authenticated history of previous attack of yellow fever.

Group 3d.—A person has (a) fever of one paroxysm, (b) albuminous urine, (c) black vomit, or (d) suppression of urine, (e) general hemorrhagic tendency under (f) circumstances where exposure to infection is a possibility.

II. Suspicious cases of yellow fever for sanitary purposes.

The following symptoms associated with a fever of one paroxysm in a patient who has apparently been exposed to infection and has never had yellow fever, shall be held to justify in either of the six following cases a suspicion of this disease, viz.:—

First, suddenness of attack either with violent pain in the head and back, injected eyes and face, or with marked congestion of the superficial capillaries.

Second, want of that correlation between pulse and temperature usual to other forms of fever.

Third, albuminous urine.

Fourth, black vomit.

Fifth, general hemorrhagic tendency.

Sixth, yellowness of skin.

The following cases shall also be deemed suspicious:—

Seventh, any case respecting which reputable and experienced physicians disagree, as to whether the disease is or is not yellow fever.

Eighth, any case respecting which efforts are made to conceal its existence, full history, and true nature—in violation of Sec. 27, City Ordinance, June 24, 1879.

In the event of death of a suspicious case a post-mortem examination should be made when practicable. Both before and after death, yellow fever is specially and pre-eminently characterized by the fact that it is, *par excellence*, a hemorrhagic fever, marked by capillary congestion and its sequelæ; hence, post-mortem evidences of a general hemorrhagic tendency in internal organs, especially in the digestive in preference to the urinary tract, shall be held to confirm the suspicion.

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Syphilis and Locomotor Ataxy.

In a communication to a recent number of the *Centralblatt für d. Med. Wissenschaften*, Erb has published an additional and important series of facts regarding the relation of syphilis to locomotor ataxy. They are in perfect agreement with the results which he has previously published, and with those brought forward by Dr. Gowers in our columns (*The Lancet*, January 15, p. 94). Of one hundred consecutive cases of tabes, only twelve gave no history of a chancre or secondary symptoms. In fifty-nine there was a history of secondary syphilis, and in twenty-nine of a chancre without secondary symptoms, making a total of eighty-eight in which there was either a venereal sore or constitutional syphilis. Of the twenty-nine cases with a chancre only, eleven were known to have been so treated (with mercury or iodide) as to make it probable that the sore was a hard one. The interval between the primary sore and the first symptoms of the ataxy was ascertained in eighty-eight cases, and it was between three and five years in seventeen cases, between six and ten years in thirty-seven cases, between eleven and twenty years in twenty-four cases, and more than twenty years in ten cases. In order to ascertain the truth of the objection that the large percentage of cases of ataxy with preceding venereal sores or constitutional syphilis is due simply to the commonness of the latter, Erb has investigated the history of four hundred individuals over twenty-five years of age, who were

under treatment for diseases which were not suspected to have any relation to syphilis. The percentages of each hundred agreed very closely, and for the whole four hundred was—a history of a chancre only, 11 per cent.; a history of secondary syphilis, 12 per cent.; and no history of either chancre or constitutional syphilis in 77 per cent. Thus, 23 per cent. had had a chancre or constitutional syphilis, while among the ataxic patients taken from the same social classes the proportion was no less than 88 per cent. Erb concludes that these figures justify the assumption that there must be an etiological connection between syphilis and locomotor ataxy.—*Lancet*, April 9, 1881.

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Bromide of Ethyl in Epilepsy.

Drs. BOURNEVILLE and OLIER publish in the *Progrès Méd.* for March 26 a paper giving an account of some trials they have made at the Bicêtre of inhalations of bromide of ethyl. These trials have not been made on many persons or continued for long periods, so that the conclusions they have arrived at can only be regarded as provisional. They are as follows: 1. Dilatation of the pupil at the commencement of the inhalation is by no means constant. 2. Complete muscular resolution is exceptional. 3. Anæsthesia is produced in very variable degrees in different subjects. 4. The temperature, the secretions, and the general condition do not seem to undergo any modification. 5. The pulse and respiration are slightly accelerated. 6. A more or less marked tremor of the limbs may be produced during the inhalation, but it does not persist after this has finished. 7. Hysterical attacks are usually arrested easily. 8. Epileptic attacks may sometimes be arrested by employing the remedy during the tonic period; but generally the inhalation exerts no effect. 9. In epilepsy, the regular daily employment of the bromide for a period of one or two months very notably diminishes the frequency of the fits.—*Med. Times and Gazette*, April 9, 1881.

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Treatment of Neuralgia by Salicylate of Soda.

M. LABBÉ has used salicylate of soda in the treatment of neuralgia (*Rev. de Thérapeutique*), and has obtained good results in cases of suborbital neuralgia, and of sciatica, which had resisted sulphate of quinine. One of these patients was diabetic, but M. Labbé believes that glycosuria does not present any counter-indication for the use of this drug. Since that time M. Labbé has not been so successful with the same treatment; and in the case of a young girl who had taken the salicylate without any result, he afterwards found that sulphate of quinine brought on a notable improvement. He is of opinion that salicylate of soda is only successful in rheumatic persons. He prescribes it in doses of 8 grammes (120 grains) for the first two days, and 4 grammes on the third. It should be taken before meals twice or thrice during the day, and a little Vichy water should be subsequently drunk. M. DUJARDIN-BEAUMETZ remarks that the treatment of neuralgia by salicylate of soda is a well-known method. Germain Sée and Descroizelles have recorded excellent examples of it. In certain cases, as has been demonstrated by Luys, the acute pains of ataxic patients have been relieved by this method; however, it is not yet generalized, and the treatment of neuralgia by salicylate of soda is still an exceptional fact. The reason is that, in the first place, this medication is uncertain; and if it is sometimes successful, it fails utterly in many more numerous cases; and, from this point of view, salicylate of soda is greatly inferior to aconitine. The second reason is, that sometimes the use of large doses of salicylate of soda produces very bad internal results. It has not been easy to explain why salicylate of soda has so injurious an action in cer-

tain persons, but it is none the less true that this drug, in doses of eight or ten drachms, is sometimes found to produce a very marked depression of the circulation, bringing on a notable lowering of the cardiac pulsations.—*London Med. Record*, April 15, 1881.

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Neurotic Atrophy.

Professor VIRCHOW (*Berl. Klin. Woch.*, No. 29, 1880) brought before the Berlin Medical Society two cases of neurotic atrophy, of the type to which he would apply the term "circumscribed," to distinguish from those cases of crossed and hemi-atrophy due to lesions of the nervous centres. One of the cases shown, a man named Schwahn, was the original case upon which Romberg founded his doctrine of tropho-neurosis, and of which Professor Virchow has notes taken by himself in 1859. The other case was a woman. In both the face was the principal part affected, the atrophy affecting one half. In the man's case, the bones were affected, because the disease began during development. In the woman, the bones were unaffected, the condition having commenced when she was 25 years old. Professor Virchow pointed out that the facts do not support the view that the atrophy depends on vaso-motor spasm; the vessels are easily seen, and the skin reddens very readily when rubbed; there is no definite alteration of sensation, though here and there slight numbness is complained of; there is no true paralysis of the muscles; they are only weakened by their bad nutrition. The affection does not involve the whole area supplied by particular nerves or branches of nerves, but only portions of those areas. The distribution of the lesions in both cases was described by Dr. Virchow. In the man's case, the origin of the condition was when he was nine years old; he had swelling of the entire neck and region at the angle of the lower jaw, which got well in a week; the skin at this part became pigmented, but in other places the atrophied patches are notably white. Dr. Virchow believes that the atrophy had made no progress since his former notes were taken in 1859. The woman's case began after a confinement, but the relation to the confinement is not clear, as it was six months or a year afterwards that she first noticed anything. As in Schwahn, the first symptom was inflammatory swelling, in her case near the left eye. A little after, she slipped down and struck the back of her head. There is no abnormality now to be found at the seat of the blow. Dr. Virchow refers to some published cases, in which a blow has been assigned as the exciting cause. In conclusion, he says that complete anatomical examination has never been made on one of these cases, and that there are few phenomena in the range of neuropathology which so much need explanation, or in which nature apparently offers so neat an experiment for distinguishing the different kinds of fibres in the peripheral nerves.—*London Med. Record*, April 15, 1881.

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Atrophic Infantile Paralysis.

M. ONIMUS has just written a paper, entitled "Considerations on the Etiology and Diagnosis of the Atrophic Paralysis of Childhood," in which he asserts (*L'Union Médicale*, April 3d) that the examination of the very much weakened electro-muscular contractility by induced currents, and less frequently by continuous currents, is the only criterion by which to distinguish infantile hemiplegia, or the peripheric paresis of the muscular groups, from the atrophic paralysis of childhood, most generally due to changes in the cells of the anterior cornua of the spinal cord. M. Onimus proves, by cases observed, that chill is the most frequent cause of this disease, by directly bringing on congestion of the gray substance of the atrophic nerve-cells. In certain cases, however, the rheumatismal influence

primarily affects the muscles and the peripheric nerves, in which inflammation sets in at once. It is especially in the spring, summer, and autumn, more than in winter, that this disease originates, by transition from heat to cold, and from imprudences committed at this period of the year. M. Onimus is convinced that modifications of circulation in the divers organs of locomotion are more logically the cause of the atrophic paralysis of childhood, than dentition, heredity, breast-milk, or the so-called internal convulsions.—*British Med. Journal*, April 23, 1881.

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Paradoxical Muscular Contraction.

Professor WESTPHAL has given the above name to the phenomenon which he describes as follows (*Archiv für Psych.*, Band x.). If, in certain diseases of the central nervous system, we quickly and strongly flex the ankle of the patient while lying in bed (occasionally slow flexion will also succeed), we find that the foot left to itself remains in the position given to it, not sinking by the force of gravity into the natural position. On observing the tendon of the tibialis anticus, we find that a moment after the flexion it suddenly starts out and remains in this condition. Corresponding to the action of the tibialis anticus, the foot is adducted. The foot remains in this position for some time (on one occasion observed by Professor Westphal for twenty-seven minutes), and then sinks gradually into its natural position. Dr. Westphal named this phenomenon "paradoxical muscular contraction," because here the passive shortening of the muscle acts as a stimulus, and this method of producing a contraction is in direct opposition to the method already described by Erb and himself, viz., by sudden extension or concussion. Dr. ERLENMEYER adds (*Centralb. für Nervenheilk.*, 1880, No. 17) that he finds patients are unable by voluntary contraction of the antagonists to overcome this contraction of the tibialis anticus. He has seen the contraction last for three-quarters of an hour. As to the cause, Dr. Erlenmeyer believes that it lies, not in the relaxation of the tibialis anticus, but in the lengthening or extension of its antagonist, the gastrocnemius. To prove this, he instituted two experiments, in the first of which he considers that he changes the lengthening of the gastrocnemius into a shortening; in the second, that he prevents altogether the extension or lengthening of the muscle. To accomplish the first object, he flexes the knee, and pushes with the hand the muscle of the calf towards the heel, a proceeding he found possible for a distance of nearly an inch. The contraction of the tibialis anticus fails in every such experiment, he says, the foot falling directly into its natural position. To accomplish the second object, he uses either the same method as the last, or with the knee flexed as before, he pushes the calf-muscle so far towards the knee that the ankle can still be fully flexed without resistance. In both cases the contraction of the tibialis anticus fails. He considers that here we have a tonic muscular contraction produced by extension of an antagonist, and differing in character from the foot-clonus or "foot phenomenon" of Westphal, which results from passive restraint of clonic spasms in a muscle stimulated by its sudden extension. He proposes for it the name "muscle phenomenon." Dr. Westphal (*Centralb. für Nervenheilk.*, 1880, No. 20) replies to the above. He says it is not the pushing upwards or downwards of the calf-muscles that prevents the occurrence of the phenomenon, but the pressure on the muscles, which acts as a mechanical stimulus, producing extension of the ankle-joint. He had already weighed and rejected the propositions made by Dr. Erlenmeyer.—*Lond. Med. Record*, April 15, 1881.

Epidemic Cerebro-Spinal Meningitis of Children.

Dr. O. Medin has given (*Nordiskt Medicinskt Arkiv*, vol. xii., 1880) a detailed account of the progress of epidemic meningitis among the nurslings of the great Orphan Institution of Stockholm in the period from 1842 to 1876. During these thirty-five years only two great epidemics were observed among very young children—one in the years 1848 to 1851, and the other in 1856. In the first epidemic, 156 children were attacked and 134 died; in the second, 32 were attacked and 24 died. But besides these epidemics some cases presented themselves in groups of small epidemics, as in 1857, 1865, 1868, and 1875–6. In reference to etiology and pathogenesis, the author finds that the outbreak of the disease shows a positive relation with the season of the year, the greater part of the cases occurring in winter and spring; but this difference appears to depend rather upon some social arrangements as to lodgings in Stockholm than upon the influence of the seasons. Dr. Medin regards cerebro-spinal meningitis as a miasmatic infectious disease, while some cases appear to indicate a contagious miasm; and he thinks that the channel by which the infection is communicated to the perinervous lymphatic system is furnished by the lymphatic spaces of the nasal mucous membrane. He never observed any instance of transmission of the disease to a wet-nurse or an ordinary nurse, and he found very few cases among the children above one year old nursed in other wards of the Institution, and moreover he found that the disease was exclusively confined to nurslings. Hence he regards the epidemic meningitis of the great Children's Hospital as a disease peculiar to the earliest age, and he has accordingly named it *the cerebro-spinal meningitis of children*. Some of the cases were abortive, and some resulted in recovery; but the fatal cases, which constituted the large majority, were marked by the following characters. The invasion of the disease was frequently preceded by cough, and the child generally became ill during the night, with restlessness, fever, heat of scalp, sometimes vomiting, often sleepiness, refusal of breast-milk, and startings in sleep. This state lasted for one or two days, sometimes more, with remissions and exacerbations, the latter generally in the night. Afterwards more violent symptoms supervened, such as intense fever with burning scalp, change in the colour of the face, prostration, drowsiness, loud cries with convulsive movements of the extremities, wildness of the eyes; the fontanelle was often swollen, the face destitute of expression, the eyes half-closed or wide open, pupils most frequently contracted, transient convergent strabismus, slight twitchings of the face. Periodical contractions of the muscles of the trunk and extremities were frequently observed; the skin was almost always hyperæsthetic, the respiration often disturbed, the belly distended, the stools frequent and loose, the urine often albuminous. The course of the disease was subject to frequent remissions, but death supervened in from two to four days; and in other cases the progress was more rapid and lasted only one or two days. As to the general nature of the malady in question, Dr. Medin regards it as an infectious epidemic essentially resembling the epidemic cerebro-spinal meningitis of adults, only distinguished from it by its almost exclusively attacking children at the earliest age. As to its symptomatology and anatomical characters, it is marked by inflammation with purulent exudation in the perinervous lymphatic system, as well as by alterations in many other organs of the body, thus revealing the constitutional nature of the affection. It must be referred to the category of miasmatic infectious diseases with localization in a certain part of the areolar tissue. The *diagnosis* is difficult from the occasional absence of the characteristic symptoms; and the affections for which it may be mistaken are tubercular meningitis, thrombosis of the cerebral sinuses, nervous disturbances of motility, intermittent fever, and infan-

tile cholera. The *prognosis* is unfavourable, and death is almost certain in the advanced cases; and sequelæ were observed in one child three years after it was cured. In this case the child was deaf and dumb, and exhibited slight paresis of the tongue and of the left leg. The *treatment* offers no remarkable feature except in a prophylactic point of view; and as a result of the enlargement of spaces in the city, and better ventilation, the disease has diminished in frequency of late years. The tables drawn up by the author from his own experience show conclusively that the deaths from cerebro-spinal meningitis increase as the cubic space afforded to the patients in the wards diminishes, and *vice versâ*. Children at a very early age require much space and fresh air.—*Med. Times and Gaz.*, April 16, 1881.

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On Hypnotic Contractures.

The strange phenomena of hypnotism are elicited with readiness in the subjects of hysteria, and have been for some time the subject of special study at the Salpétrière by M. CHARCOT. His latest investigations (described at a recent meeting of the Société de Biologie) have been chiefly directed to the phenomena of muscular contracture, which is readily obtained by the mechanical stimulation of the tendon, of the motor nerve, or of the substance of the muscle, so that it can readily be localized in a single muscle or group of muscles. This contraction is very intense, and fixes the limb in a given attitude with a force which cannot be overcome even by energetic efforts. When the hand is closed thus it cannot be opened by any force which can be applied to it. Nevertheless, it can be at once relaxed by mechanical stimulation of the antagonists, such as is afforded by gentle rubbing of the extensors of the hand; the fingers are at once extended, and the contracture disappears as if by enchantment. If the contraction is not thus relaxed, when the patient is awaked one of three things may happen: (1) The contracture may disappear, the patient recovering with consciousness, and the liberty of all movement. (2) If the patient is rendered cataleptic the contracture may continue after the awaking, being, as it were, fixed by the catalepsy. (3) In some cases the contracture persists, although the patient is not rendered cataleptic.

The patients who preserve the contracture after the recovery of consciousness present the closest resemblance to hysterical patients affected with permanent contracture. Friction of the antagonists is powerless to resolve it. A magnet applied near the fixed limb only increases the contracture, but applied to the opposite limb it causes the curious phenomenon of the transfer of the contracture. This changes its place to the opposite side, but does not yield to the magnet. To remove it the patient must be again placed in the hypnotic state, when the stimulation of the antagonists suffices to make it disappear. In most cases the change of contracture occurs in all the muscles of a limb, but it has also been found that when only a few muscles are affected by the contracture, the transfer involves exactly the same muscles of the opposite side; and this is true however the first contracture may have been brought about. Anæmia of a limb, such as is produced by Esmarch's bandage, hinders the development of the neuro-muscular hyper-excitability, as Brissaud and Richet demonstrated. If, for instance, a limb is thus treated, the patient hypnotized, and the muscles of a limb are rubbed, no contracture is induced; but as soon as the current of blood is restored, the contracture occurs, without any further stimulation. Hence it seems that in the anæmic limb there is a sort of potential contracture. The impulse is received by the nerve centres, and is preserved there until the re-establishment of the current of blood, restoring to the muscles the ability to contract, permits it to manifest itself. This latent contracture may be transferred by the

magnet from one limb to another on the opposite side, just as may be the developed contracture. As an illustration of the method of obtaining these results an instance is described in detail. The patient, having been hypnotized, is in a state of lethargy, with muscular hyper-excitability; but it would not do to apply Esmarch's bandage while she is in that condition, because the mechanical stimulation would probably cause a contracture of the whole limb. The patient's eyelids are therefore raised. She at once becomes cataleptic, the limbs retain any position in which they may be placed, but the muscles have ceased to be sensitive to mechanical excitation. Advantage is taken of this loss of excitability to apply the bandage. The eyelids are then pressed down. The catalepsy at once ceases, the patient resumes the condition of lethargy, and the muscles recover their excitability. Then, without touching the limb elsewhere, a small button is pressed several times against the ulnar nerve behind the elbow. No effect follows until the bandage is removed, and then, as blood returns to the limb, the hand slowly assumes the position due to contracture of the muscles supplied by the ulnar nerve, especially the interossei. In this experiment the excitation of the ulnar nerve has impressed the nerve centre in a peculiar way, but only in the parts corresponding to the ulnar nerve. The nerve action for the contracture in the muscles supplied by the nerve takes place in the nerve centre, but not in the periphery until the return of blood to the muscles restores their contractility. Again, the patient being asleep, the arm is anæmiated. The ulnar nerve is then stimulated, of course without effect. Nevertheless, the spinal cord has been influenced, and if the circulation were to be restored the contracture would come on. But if, instead of this, a magnet be applied to the other arm, the contracture is produced in this in exactly the same way as if it were actually transferred from the first side. The lateral contracture has been transferred. These phenomena, in the opinion of M. Charcot and M. Richet, are evidence of the reflex nature of the neuro-muscular hyper-excitability, whether produced by the mechanical stimulation of a nerve, a muscle, or a tendon.—*Lancet*, May 7, 1881.

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Treatment of Diphtheria.

Weise states (*Berl. Klin. Wochen.* No. 4), as the result of his experience of Guttmann's treatment of diphtheria by pilocarpin, that it produces an excellent and rapid effect in many cases. His own treatment, under which he has had fifty-four cases without a death, is with salicylic acid and benzoate of soda. Every hour and a half the patient inhales, or has his throat painted with, a solution of salicylic acid (one part, by weight, to fifty of glycerine and rectified spirit in equal parts), and at the same time takes benzoate of soda internally, and stimulants. The inhalation is given with an instrument constructed by Dr. Weise, consisting of a small spray-apparatus combined with a tongue depressor.—*London Med. Record*, April 15, 1881.

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Treatment of Pharyngeal Diphtheria.

Dr. Oertel directs his treatment (*Archives of Laryngol.*, Jan. 1, 1881), first, to the destruction of the cause of the disease; and second, to the removal of the products from the affected parts. For the former, he thinks carbolic acid a most efficient remedy. When the results obtained from its use have been unsatisfactory, the solution has not been sufficiently strong. Of twenty-seven of the graver cases which have been treated by Dr. Oertel, he believes that three-fourths would have ended fatally but for the use of carbolic acid. He employs a five per cent. solution nebulized by means of a steam-atomizer, and avoids the use of a brush or sponge, as he thinks these only irritate the parts. He considers the absorption of the carbolic acid

by the lymphatics of the oral and pharyngeal cavity exceedingly important, for the purpose of making the absorbed mucous products harmless. He further believes in a beneficial influence exerted by carbolic acid upon the blood. A rapid amelioration of the disease always appeared with the excretion of dark, olive-green urine. The inhalations are made every two or three hours, or even oftener, and last from two to five minutes, according to the severity of the disease and the strength of the patient. As the patient improves, the inhalations are made less often, and are of shorter duration. If the urine change colour strikingly, or if gastric disturbances occur, the inhalations are reduced in number. If the urine become dark-coloured, they are discontinued for twenty-four hours, and other solutions, such as one containing from two to four per cent. of boracic acid, or five per cent. of benzoate of soda, are substituted, the carbolic acid treatment being recommenced when the urine has regained its natural colour. To hasten the separation of the diphtherial membranes, Dr. Oertel advises two methods: 1. The loosening of the membranes by suppuration; 2. The mechanical raising of the membranes by exciting increased secretion of mucus. The first method mainly involves the employment of heat, which promotes suppuration, and thereby demarcation and separation of the membranes. Hot vapours or steam are used, for a quarter of an hour at a time, from four to eight times a day, together with the carbolic acid treatment; and under these means the extension of the diphtherial deposits soon ceases. The hot inhalations are reduced in number when the separation is fairly progressing, but the carbolic acid is continued for two days, to prevent a renewed infection of the mucous membrane. Dr. Oertel finds other local remedies decidedly inferior to carbolic acid. Lime-water and lactic acid, though able to swell and dissolve fibrinous coagula, possess no antiseptic or disinfectant properties, and are not indicated in pharyngeal diphtheria, as in the mouth and pharynx there is no danger of stenosis. To stimulate the secretion of mucus underneath the deposits, and so mechanically to lift them up, and at the same time to remove the fungous growths and septic matters from the mouth, Dr. Oertel uses muriate of pilocarpin, which he gives in doses of one to five centigrammes (0.15 to 0.75 grain) dissolved in water. The rapid separation of the membrane, which took place in a case accidentally complicated by salivation, led Dr. Oertel to try this remedy. In adults, when the morbid process has lasted some days, he makes a subcutaneous injection of from one to two milligrammes (0.015 to 0.03 grain) of pilocarpin.—*London Med. Record*, May 15, 1881.

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Pericarditis Treated by Incision into Pericardium.

Dr. ROSENTEIN, of Leiden, relates (*Berliner Klinische Wochenschrift*, No. 5, 1881) a case of purulent pericarditis, treated by a free incision into the pericardium much as we now treat some cases of purulent pleurisy. A boy, ten years of age, came under observation after having been attacked fourteen days previously with symptoms of gastric catarrh. On admission into hospital, the following was noted as the *status præsens*:—"The patient lies by preference on his back, though on either side position does not cause any inconvenience. Nutrition is good; cheeks and mucous membranes remarkably pale; axillary temperature 99.8° Fahr.; pulse very small; respiration 40, costo-abdominal; alæ nasi working strongly. The chest measures, at the level of the third dorsal vertebra, on the right side thirty-four, on the left thirty-six centimeteres; at the level of the sixth dorsal vertebra, right side thirty-six, left side thirty-seven centimetres. The heart's beat is neither to be felt nor seen, nor are the heart-sounds audible *at any part of the chest*. On percussion, on the right side the percussion-sounds are normal as low as the sixth rib; on the left side, dulness commences between

the first and second ribs, and gradually extends to the xiphoid cartilage, passing obliquely towards the left as far as the mid-axillary line, and to the right as far as the nipple-line (thus presenting a somewhat triangular space, apex up and base downwards). There is no change in the dulness on altering the patient's position. . . ." A diagnosis of effusion into the pericardium was, of course, made; but its exact nature could only be determined by an exploratory puncture, and this was done. The presence of pus having been made certain, aspiration (between the fourth and fifth ribs, close to the margin of the sternum) with a Potain's apparatus was practised, and upwards of twenty-two ounces of pure pus were withdrawn. The relief afforded by this operation is compared with that which so often follows tracheotomy for laryngeal obstruction. The relief, however, did not last very long, and it became necessary to repeat the tapping on the third day, but the pericarditis was not found to be associated with a left pleurisy, which had developed since the first tapping. The pleura was accordingly tapped, and thirty-eight ounces of serous effusion were withdrawn. The pericardium was again tapped, and about four ounces of pus taken out. The patient's condition did not much improve: there was very considerable and increasing dyspnœa, with lividity, and some œdema of the feet and legs; sleep was much broken, and the general condition very low. Under the circumstances, it was determined to incise the pericardium, as the physical signs pointed pretty conclusively to a further accumulation of fluid within it. The operation was carried out under the strictest antiseptic precautions. An incision, about three centimetres long, was made between the fourth and fifth ribs, close to the left margin of the sternum, and each layer separately divided until the pericardium was reached. An opening was then made into it, through which a considerable quantity of pus escaped; two drainage-tubes were put in, and the wound dressed after Lister's method. The patient was, very shortly after the operation, able to lie on his back, and felt much relieved by it. It was not, however, until at least two hours later that the pulse became appreciable. On the day following, the temperature stood at 101° Fahr., but it then came down to normal and remained so. At the end of eight weeks, the pericardial wound, which had been gradually closing, was cicatrized. There were no further pericardial troubles. But the signs of the pleuritic effusion pointed to a fresh collection in this cavity, while there was still fever after removing thirty-five ounces of fluid; as the general condition therefore was not relieved, a free incision was made into the chest, and another fifty ounces were removed. Improvement now set in, and at the end of six weeks the wound had closed, and the patient was sent out of the hospital cured.

The author draws the following conclusions from his case:—1. The case teaches that purulent pericarditis, just as empyema, may at times run its course without giving rise to fever or œdema of the tissues, so that the nature of the exudation can only be decided after an exploratory puncture. 2. We must not abstain from removing the exudation on account of any supposed myocarditic changes. 3. In cases of considerable pericardial effusions, change of position may not influence the line of dulness; but this fact must not always be interpreted in favour of dilatation of the heart.—*Med. Times and Gazette*, March 19, 1881.

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Adult Cephalic Murmurs.

M. Tripier (*Revue de Méd.*, Feb. and March, 1881) points out that a cephalic murmur is found in adults, and that he has observed it in several chlorotic patients, and in one case of each of the following: metrorrhagic anæmia, pernicious anæmia, intra-cranial tumour, and hydrocephalus. It is a systolic murmur, and is best heard over the temples, especially on the right side. It is not at all

influenced by change of posture, but can be modified or suppressed by pressure on the carotids, and it diminishes or increases according as the patient improves or retrogrades. It is not transmitted from the heart, but is of local origin, as in some cases no cardiac murmur was present. M. Tripier has never met with the continuous cephalic murmur.—*London Medical Record*, April 15, 1881.

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Examination of the Local Sensibility of the Precordial and Pre-Aortic Regions in Diseases of the Heart.

The examination of the local sensibility of the precordial and pre-aortic regions will, Dr. PÉTER believes (*Revue Méd.*, Jan. 8th, 1881), become, in course of time, as necessary and usual as auscultation and percussion. It has for its object the investigation of the state of sensibility of the heart—that is, of its muscles and ganglia; the cardiac plexus; the pneumogastric nerves; and the phrenic nerves.

The process is very simple. It consists in pressing with the tip of the index finger, and with moderate force (just as one searches for painful spots in cases of neuralgia), upon the intercostal spaces in the whole of the precordial and pre-aortic region; also upon the sternum, and generally in those points of the thorax and neck in relation with these organs, the sensibility of which we desire to explore. In health, the cardiac muscle is insensible. Is it so in disease? Dr. Péter has satisfied himself that it is not; that in disease it suffers, and pressure upon it is painful. In acute and chronic myocarditis, patients complain spontaneously of painful sensations in the heart, which are too frequently disregarded, or misinterpreted and referred to intercostal neuralgia. But these pains are described as deep-seated, and they are aggravated by emotions or fatigue.

But, besides this spontaneous complaint of pain, pain may be excited in such cases by pressure. If we press with the tip of the finger, and with sufficient force, in succession, on the third, fourth, fifth, and even sixth left intercostal spaces, at first close to the sternum, and then more and more to the left of that bone as we descend—we shall not fail, in every case of myocarditis, to provoke tolerably acute pains. The greatest amount of pain is felt in the fourth and fifth spaces (sometimes, in cases of hypertrophy, in the sixth) corresponding with the situation of the ventricles, which are more commonly the seat of inflammation than the auricles. In some cases, pressure over the apex of the heart, which is very commonly the seat of degenerative changes, is alone painful. The pain produced by this pressure is sufficiently acute for the patient to start back or even to cry out.

These painful points differ from those of intercostal neuralgia, inasmuch as they are wholly *anterior*, whereas in neuralgia there are also two other painful spots—one lateral and the other posterior. In inveterate smokers beyond middle age, Dr. Péter has frequently found a tender spot, on pressure, in the third left intercostal space, near the sternum—a spot which, he thinks, corresponds with the auriculo-ventricular groove, and to the situation of the ganglion of Remak, which he concludes to be in a morbid state from impregnation with tobacco. Such persons complain of cardiac intermission, and of deep-seated pain which they refer to the spot indicated.

In disease of the aorta and its valves, there is often pain on pressure in the second left intercostal space, quite close to the sternum; this is not caused by the aortic lesion itself, but by a "propagated neuritis." In exploring the sensibility of the nerves of the cardiac plexus, we must press gently, but with sufficient force, first in the third left intercostal space, then in the second, and then in the first; and from the second left space we pass to the adjacent portion of the ster-

num. If there be neuritis, there is pain on pressure, and the same is the case if there exists neuralgia of the plexus; and this should always make us suspect the existence of disease of the coats of the aorta.

By pursuing the same method, the sensibility of the pneumogastric may be explored. Having discovered the presence of a painful spot in the second left intercostal space, we may next find tenderness over the cervical portion of the nerve by compressing it just in front of the sterno-mastoid muscle; and then usually pain is felt either on the left side exclusively, or on both sides, but in that case it is always more intense on the left; and we may even find evidence of a degree of suffering by pressing over the apparent origin of the nerve in the nape of the neck, *i.e.*, over the second, third, and fourth cervical spines. It is necessary also to examine the sensibility of the phrenic nerves: this is done by pressing with the finger, successively, first, over the diaphragmatic attachment; second, over their course within the thorax along the borders of the sternum on both sides; and, third, in the neck over the attachment of the scalenus anticus to the first rib. We may thus find that both phrenics are painful, and that the left is more so than the right, and sometimes that the left is alone painful, or remains so after the right has ceased to be painful.

Dr. Péter considers this method of exploring the sensibility of the precordial and pre-aortic regions as of the highest importance, in the diagnosis of diseased states of the cardiac muscle and of the cardiac nerves. An important precaution in the case of any painful affection, as angina pectoris, is not to press too strongly with the tip of the finger. Dr. Péter has seen an attack of angina brought on by neglect of this precaution.—*London Med. Record*, May 15, 1881.

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The Treatment of Splenic Tumours.

The inutility of internal remedies in advanced cases of splenic leucocythæmia led Kussmaul to try whether the spleen could not be made to shrink up by numerous punctures in different directions. The results are detailed in an inaugural dissertation by his pupil, J. Jäger. A hollow needle, at first a millimetre and afterwards a millimetre and a half in diameter, was thrust into the spleen of a patient aged thirty-eight, suffering from splenic leucocythæmia. The depth of the punctures was eleven centimetres. The hope was entertained that the hemorrhages into the substance of the spleen would lead to cicatricial contraction at the spot. The punctures caused the patient scarcely any suffering, but unfortunately the result on the spleen was also *nil*. There was a slight improvement in the course of some weeks, but this seemed attributable to the patient's rest. The spleen did not lessen in size, and the proportion of white to red corpuscles remained much as before the treatment—one white to seven or ten red. But an unexpected effect resulted from the deeper punctures—a considerable increase in the quantity of the urine, lasting for about a day, associated with strangury. The latter commenced an hour after the operation, and continued until the following morning. The specific gravity of the urine was lowered, but it was free from albumen and sugar. Senator has informed Kussmaul that he has also observed polyuria to follow puncture of the spleen. The explanation of the phenomenon is obscure. Kussmaul has also tried galvano-puncture of the spleen, but with no better results. After seven minutes' application the spleen was considerably swollen and painful, but subsequently again lessened in size. On the third application, four weeks after the first, the patient for the first time experienced severe pain in the sternum beneath the spot on which the positive pole had been placed; the patient attributed the pain to the electrode. So far, however, the treatment, if it did no good, did little harm. The same statement cannot be

said of the next measure employed, which is unfortunately a contribution to toxicology rather than to therapeutics. A gramme of a 10 per cent. solution of recently prepared sclerotic acid was injected into the spleen. Ten minutes later there was a severe rigor; the legs became rigid and intensely painful, the abdomen retracted, the extremities cold, the face cyanotic, the veins of the neck swollen, the breathing quick and purely costal, and the pupils dilated. Consciousness was unimpaired. The tetanoid attack lasted forty minutes. The temperature rose to 104° F. Abundant sweating followed, with vomiting and watery diarrhœa. The patient died a few hours later. The post mortem showed that, besides the enlargement of the spleen, the medulla of the bones was affected, but there was no disease of the glands. No trace could be found in the spleen of any effect of the punctures, and there were no adhesions of the organ to the abdominal wall. Death was apparently due to the rapid passage of the sclerotic acid into the blood, but Kussmaul is inclined to ascribe it rather to the rapid passage of the water containing the acid into the blood than to the acid itself. This was found by subsequent examination to be free from other toxic ingredients.

Mosler has tried the effect of injections of dilute carbolic acid and of Fowler's solution into a chronic splenic tumour. The result in Kussmaul's case led to careful precautions to avoid an untoward occurrence. Considerable benefit is said to have resulted from the treatment, although previous measures had been ineffectual.—*Lancet*, May 28, 1881.

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Treatment of Diabetes Mellitus by Salts of Ammonia.

The treatment of diabetes mellitus with chloride or citrate of ammonia (recommended by Adamkiewicz, and said by him to reduce the sugar in one case as much as one ounce and four-fifths daily) has been repeated, but without satisfactory result (*Zetschr. für Klin. Med.*, Band i. Heft 3, p. 610), by GUTTMANN, in the case of a phthisical patient passing 6.4 per cent. of sugar in the urine. During the six days previous, the patient passed, on an average, 152 ounces of urine daily, containing 9 ounces of sugar; while during the five days that the ammonium chloride (two and a half drachms daily) was taken, the average daily amount of urine passed was 223 ounces, containing 14½ ounces of sugar; *i. e.*, 5½ ounces more sugar were excreted daily than before. In two further trials of five and three days each with the chloride and citrate of ammonia, the amount of sugar diminished only slightly—half to three-quarters of an ounce a day.—*British Med. Journal*, May 7, 1881.

SURGERY.

Langenbeck's Operation for Hare-lip.

Up to the present time WOLFF (*Arch. für Klin. Chir.*, Band xxv. p. 899) has made use of this method as an after-operation in adults, and in cases of incomplete hare-lip. The incision is commenced near the angle of the mouth, and is carried close above the margin of the lip (in this part very thick), it then mounts at the side of the fissure close above its upper limit (the border of the lip here being exceedingly narrow), from which point it is turned angularly downwards, carried along the side of the fissure and onwards almost to the other angle of the mouth. The two halves of the margin of the lip, joined in the centre by an exceedingly narrow bridge, now hang down in the shape of a long strip against the lower lip. The edges of the fissure are now approximated and united by two or three sutures put in from above downwards, and upon the basis thus formed

the margin of the lip is modelled. The broad lateral portions are drawn inwards, the narrow central portion being gathered up, and so arranged as to lie exactly in the median line, thus internally to the lower extremity of the closed fissure, which is situated on one side. A small coil-like projection, formed by the narrow bridge of margin of lip connecting the two lateral portions, now touches the lower lip exactly in the middle line. Finally, the margin of lip is sutured throughout to the upper lip in its new connection. Wolff alleges that his method possesses the following advantages: 1. A good symmetrical result, by reason of the normal arrangement of the margin of the lip, and the shifting of the scar to the meeting point of the white skin and red lip-border; 2. A good functional result, the whole circumference of the mouth being provided with closing muscular fibres; 3. Pure operative advantage, since here, as in Nélaton's operation, not a morsel of the border of the lip is removed. The difference between his operation and Nélaton's consists in the more extensive separation and sliding of the margin of the lip, together with the gathering up of the central portion.—*London Med. Record*, May 15, 1881.

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Removal of Foreign Bodies from the Larynx.

In a paper published in the *Annales des Malad. de l'Oreille, du Larynx, etc.*, for Dec. 1880, Dr. KRISHABER considers the different methods of removing foreign bodies which have become lodged on a level with the glottis, describes four cases in point, and finally arrives at certain conclusions. The cases are very briefly as follows: Case 1 was that of a workman, aged 36, with a fifty-centime piece lying horizontally across the vocal cords, with its margins engaged in the ventricles of Morgagni. It was removed by forceps, under guidance of the mirror, but was accidentally swallowed immediately afterwards. Case 2. A fifty-centime piece lodged in a similar position in the larynx of a man, aged 35. Tracheotomy was performed, and the coin removed some days afterwards, in the following manner: The canula having been removed, the coin was pushed into the mouth by means of a large sound passed through the tracheal wound, whilst the patient was in the horizontal position. In case 3, a flat piece of bone, fixed in about the same situation, was removed with forceps *per vias naturales*. Case 4. A girl aged 9 years had a copper ornament (of the size and shape of a silver twenty-centime piece) lodged in the larynx on a level with the vocal cords. It was removed by the following method. The child being laid on its back across a bed with its head hanging over the edge, the surgeon knelt down in front of it, and passed his left forefinger into the larynx, whilst with the right hand he introduced a slender pair of laryngeal forceps, and extracted the foreign body. In regard to the removal of foreign bodies from this situation, the author distinguishes two varieties of substances: first, those stuck into the mucous membrane, such as pieces of bone, fish-bones, pins, etc.; and secondly, bodies which do not adhere to the laryngeal walls, as coins, nuts, etc. The former, he recommends, should be removed *per vias naturales* without previous operation; the latter also *per vias naturales*, but only after the trachea has been previously opened, and, if necessary, plugged, in order to prevent the foreign body from falling into the trachea or bronchi.—*London Med. Record*, April 15, 1881.

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Local Anæsthesia of the Larynx.

Professor SCHROETTER, who has not been able to produce anæsthesia of the larynx to his satisfaction by the use of bromide of potassium, tannin, ether-spray, subcutaneous injections of morphia, carbolic acid, etc., now uses Türck's method in a modified form, which he describes in the *Allgemeine Wiener Med. Zeit.*,

March 15, 1881. The day before the operation the larynx of the patient is painted twelve times with pure chloroform, the object of which is to produce a hyperæmia of the mucous membrane, and so prepare it for the reception of the narcotic. This lasts from seven to nine minutes, and, as it causes a violent burning, is the most disagreeable part of the operation. After an hour, twelve paintings of concentrated solution of morphia (muriate of morphia, 1 part; distilled water, 10 parts) are applied, the patient being told to expectorate after each application, and to thoroughly cleanse his mouth and throat with a tannin gargle. He then sleeps, but must be watched during the night by the physician or other competent person, with proper antidotes (such as tea, coffee, etc.) in readiness. Dr. Schroetter has, however, found that, when the proceeding has been conducted with the above caution, there have not been any symptoms of poisoning, or, if any, but very slight. The larynx by eight o'clock the next morning has usually become so insensitive, that the operation may be at once proceeded with. Occasionally, the morphia application has to be repeated. Excellent as Dr. Schroetter considers this method to be, he does not make use of it often, for the reason that it is seldom necessary. For the removal of polypi, etc., a preliminary practice of introducing the sound a few times is sufficient. The painting with the chloroform is so disagreeable a proceeding, that he does not willingly resort to it. The importance, however, of being able to effectually produce local anæsthesia of the larynx is seen by the following case: A young man was brought into the hospital with a bone apparently lodged in the larynx. On laryngoscopic examination, a flat bone about 1 centimetre long could be seen during inspiration under the left vocal cord. On both sides of the bone, between it and the laryngeal wall, was a half-moon-shaped space, through which the patient only just audibly breathed. As the bone could not be removed by any other means, Dr. Schroetter tried to extract it with the forceps; but, owing to the sensitive condition of the parts, the instrument could not be introduced. Local anæsthesia was begun the same evening. The patient bore the paintings of chloroform better than usual, and, later on, the morphia solution was applied, the caution before alluded to being observed. The patient had no bad symptoms. In the morning, although the anæsthesia of the larynx was almost perfect, morphia was again applied by way of caution; and, by ten o'clock, the forceps could be introduced with the greatest ease, and the bone was extracted in two pieces. The following morning the anæsthesia was still present, but by evening had entirely disappeared.—*London Medical Record*, May 15, 1881.

A Second Case of Resection of the Stomach.

In a second case of resection of the stomach, performed by Dr. BILLROTH, unfortunately, the patient died on the eighth day after the operation, from inanition. Milk, coffee, soup, wine, and various forms of solid food, especially meat and biscuits, freely divided and in various combinations, were tried as food; but nothing remained longer than three or four hours in the stomach, being then vomited, mixed with gastric juice and tinged with bile. As symptoms of peritonitis were entirely absent, the vomiting could be traced only to mechanical obstruction to the passing of the contents of the stomach into the duodenum. At a meeting of the Vienna Medical Society, Dr. Billroth expressed the opinion that there must have been a kind of bend in the passage from the stomach to the duodenum, by which the transit of the food was made difficult. Another important fact noted was that the stomach, having been previously much dilated, would scarcely have sufficient power of contraction to overcome this obstruction. The action of the stomach was also considerably impeded by peritoneal adhesions to

surrounding parts, especially the abdominal wall. These considerations induced Dr. Billroth to reopen the wound six days after the operation, in order either to remove an existing mechanical obstruction, or to form a duodenal fistula, through which the patient might be temporarily fed. Dr. Billroth opened the stomach for the second time, under anæsthetics, and found it very much dilated and fixed, not only within the sphere of the former operation, but also higher up towards the diaphragm. The passage into the duodenum was free, but bent. As a fresh and complete suture of the stomach would have taken too much time, and, moreover, was not advisable in the lowered state of vitality of the patient, the abdominal wall was fixed to the opening in the stomach by a few sutures; and a drainage-tube, about the size of a finger, was placed in the duodenum for the introduction of food. This arrangement answered well; but the patient, who, since the operation, had been nourished only by enemata, was past recovery, and died from exhaustion thirty hours after the second operation. The necropsy confirmed the observations made during life. Signs of general peritonitis were entirely absent. This second case, as well as the first, teaches that the operation of resection of the stomach carries with it as little danger of general peritonitis as any other laparotomy, carried out under strict antiseptic precautions, without spray. It appeared further, from the necropsy, that the extirpation of the cancer was complete. The mesenteric glands were intact. With respect to the mechanical cause of death, this case is prospectively instructive, especially in cases where the stomach is dilated. These first two cases of Dr. Billroth have made a beginning in this serious operation; but much labour and experience will be necessary until recovery can be expected after resection of the stomach, as quickly and with as little anxiety as after ovariotomy. The first patient operated on by resection of the stomach is at the present time in perfect health.—*British Med. Journal*, April 23, 1881.

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Gastrostomy and Duodenostomy.

Dr. Carl Langenbuch has sent to our contemporary, the *Berliner Klinische Wochenschrift*, an interesting contribution on the above subjects. He first refers to a recent case of gastrostomy performed and reported on by Dr. P. Kraske, of Halle, in which death took place from an "artificial perforative peritonitis," brought about by an escape of the gastric contents, and then relates three cases in which he had himself operated. His own cases may be briefly summarized as follows: A child, one hundred and seventy-three days old, who had swallowed some caustic solution. This part of the operation was performed with full Listerian precautions. The stomach itself was opened fourteen days later; a very small opening was made into it, and a drainage-tube with stopcock was inserted. This fitted so accurately that none of the acid contents of the stomach ever escaped to irritate the edges of the wound or the adjacent skin. The incision commenced in the middle line, and followed the arch of the rib cartilages towards the left side as far as the eighth cartilage. The tissues of the abdominal wall were divided layer by layer; the peritoneum was opened on a director, and its free margins were seized by forceps to prevent retraction. A portion of the stomach at once presented, and a small portion of the left lobe of the liver became visible. The stomach was next attached to the abdominal walls by fifteen fine silk sutures arranged in an oval fashion; they included only the peritoneal and muscular layers of the stomach. The earliest attempts at feeding caused some little discomfort; but this soon passed off, and the child began to gain weight. A feeling of thirst was almost constant. Two hundred and ten days after the operation the child contracted a severe catarrhal pneumonia, and died. The adhesion between the stomach and the abdominal walls was quite firm. The second

case was that of a woman aged sixty, with cancer of the lower part of the œsophagus. A similar operation to the one just detailed was performed; but the patient, who was exceedingly low at the time of the operation, died two days later. Although so short a time had elapsed, it was found at the post-mortem examination that the stomach was already firmly adherent to the abdominal wall; there was no peritonitis whatever. The third case was one of duodenostomy: a woman aged thirty-two years, who had had stomach-troubles for several years. In the neighbourhood of the pylorus a well-marked tumour was appreciable, which could be followed along the lesser curvature of the stomach. The pylorus seemed to be entirely occluded, as there was constant vomiting of the food, and scarcely any feces were passed. The operation was intended to be exploratory: if feasible, the pylorus was to be excised; if not, then an opening was to be made into the duodenum—and this, in fact, was done, for it was found that the cancerous disease had spread along the lesser curvature of the stomach, and that resection of the pylorus was therefore quite impossible. A piece of the first portion of the duodenum was attached to the abdominal wall by fifteen to twenty fine sutures, which did not quite penetrate the entire thickness of the duodenum. The gut was opened seven days after the first operation, which was performed with all Listerian precautions. The patient, however, died ten days later of inanition.

The author, in commenting on these operations in general, divides them into two groups of cases—those in which the object of the operation is attained, and those in which it is not attained. Taking the last group first, these cases are again subdivided into such as die directly from the effects of the operation before the opening has been established—of acute septic peritonitis, for instance, or from some intercurrent causes, such as pneumonia or metastases. The first group is also subdivided (1) into cases which are successful as surgical operations, but in which the life of the patient is not materially prolonged; and (2) into cases which are completely successful.

Death from septic peritonitis in the present stage of surgical knowledge ought not, he thinks, to occur, unless the teachings of antiseptic surgery go unheeded. He says, too, that the antiseptic dressing must be most carefully carried out; "a partial antisepsis is about as good as none at all." The sutures ought not to penetrate through the mucous membrane of the stomach, as the openings may possibly become enlarged by the constant peristaltic movements which take place, and thus give passage to some food or other material into the general peritoneal cavity. Great care should be exercised in adapting the stomach to the wound, in order to avoid traction as much as possible, and as many sutures as can reasonably be used should be inserted in order to gain the greatest amount of adaptation to the abdominal walls. The silk should be soft and well carbolized; it may pass for a quarter of an inch beneath the muscular tissue, and the included oval of gastric tissue should not be too small. If the stomach does not seem firmly attached, one single thread might be passed through the centre of the oval into the stomach, and after passing out again might be tied over a roll of carbolized gauze placed on the outside. In this way the stomach may be well and firmly attached to the abdominal wall, and with little or no danger of extraneous matters getting into the peritoneal cavity, or of being displaced by any sudden fit of coughing.

As regards the immediate opening of the stomach, the author rejects the plan as very unsafe. If there is urgency, he would suggest the use of an aspirator syringe, and inject liquid food in this manner. It is in cases of carcinoma that there is usually much vital depression, depending rather on the dyscrasia than on inanition proper; and it would seem as if a carcinomatous stomach, once out of

working order, re-takes on with difficulty its digestive functions. Hence the necessity for a comparatively early operation, if surgeons would be successful in this form of disease. By waiting until the patient is nearly exhausted, it is not possible to allow a sufficiently long interval after the operation to elapse before opening the stomach. Langenbuch thinks that as soon as the difficulties of swallowing are at all pronounced, the first part of the operation should be undertaken, and that the surgeon ought not to wait until the œsophagus is quite impermeable. As regards the second part of the proceeding, he especially recommends but a very small opening into the stomach—so small, indeed, that a certain amount of force is required to get in the tube. The tube should be provided with a stop-cock; and thus all escape is prevented. Before the stomach is punctured, it is desirable to fix it with a sharp hook, in order to prevent any possibility of inadvertently puncturing its posterior wall at the same time.—*Med. Times and Gaz.*, May 14, 1881.

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Intestinal Resection.

Professor CZERNY communicates (*Berl. Klin. Woch.*, No. 45, 1880) three cases of intestinal resection which he has performed. In two cases, the gangrenous coil of intestine in a strangulated hernia was resected; and, in the third case, a malignant tumour of the colon was removed. In one of the first two cases, the patient recovered perfectly without fever or reaction of any sort; in the second, the already pulseless patient died during the operation in a fit of fecal vomiting. The third case was the most remarkable. A female, 47 years old, with a tumour in the abdomen, diagnosed as intestinal cancer, had vomitings and diarrhœa. On operation, there was found a large tumour of the transverse colon, firmly attached to a coil of the sigmoid flexure. Part of the sigmoid flexure was first resected, the ends being brought together with thirty-three sutures; then a large piece of the colon was removed, and the ends united by twenty-six sutures. Lastly, a wedge-shaped piece of the meso-colon was removed, also necessitating ligatures. A drainage-tube was inserted, and the wound in the abdominal wall closed by means of four deep and eight superficial sutures. The patient recovered, and was living half a year after the operation, although, from the infiltration of the mesenteric glands, a recurrence is inevitable. Dr. Czerny proceeds as follows. The intestine being compressed above and below, the diseased part is removed along with the corresponding wedge of the mesentery. The ends are now disinfected, and a double row of carbolized silk sutures applied. Those in the first row include about a twelfth of an inch of the serous and muscular layers of each end of the intestine, and are about a twelfth of an inch apart. A second row of sutures, about a fifth of an inch apart, are applied over and partly including the first. The intestine is then returned into the abdomen, and antiseptic dressing applied.—*London Med. Record*, April 15, 1881.

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Resection of about six and a half feet of the Small Intestine, with Recovery.

Dr. KOERBERLÉ, of Strasbourg, reports in the *Gazette Hebdomadaire*, Nos. 4, 5, 1881, the following remarkable case. Miss K., aged twenty-two, never had any disease nor indispositions, except colics, of which she has suffered at different times for the last two or three years. These had returned more severe and more frequent last year, and in October (1880), severe symptoms of intestinal strangulation recurred twice, fifteen days apart. These were relieved in both circumstances by clysters. Ever since, she suffered with continuous and intense colics, which gave her no rest, day or night, and which could hardly be subdued by hypodermics of morphia. Three points of intestinal obstruction

could be inferred from the successive colics, but a positive diagnosis of the lesions could not be made.

Dr. Koeberlé performed gastrotomy, November 27. There were four narrowings more and more marked, the last being hardly .004 m. (⅛ in.). The first two were .14 m. (5½ in.) distant. These strictures involved two metres (6½ ft.) of the small intestine, all of which were amputated between two ligatures at each end, and twelve ligatures were applied to the mesenteric vessels. The ligatures from the two free ends of the intestine were tied together in such a manner as to lay the sides opposite to the mesentery in apposition, the most favourable condition for enterectomy, and they were attached to the fibrous tissue of the *linea alba* through a suture which retained them in contact with the peritoneum at the inferior angle of the incision. The ligatures of the mesentery were brought out at the superior angle of the abdominal incision, where they were retained, together with the ligatures of the intestine, in a fixed position. The superior part of the wound was partially closed. Enterotomy was made the third day. The ligatures and sloughs came off from the twelfth to the fifteenth day. First alvine discharge took place after twenty days. On the twenty-fifth day the communication with the intestine was almost closed, and six weeks after the operation, the external wound was also closed and healed. The patient is feeling quite well, and experiences no digestive disturbance.

The temperature rose above 38° C. (100⅘° F.) once on the third day. The operation lasted more than three hours, and was not made antiseptically. The peritoneal cavity was simply cleaned by towels which imbibed the serum as low down as the pelvic cavity. Patient was fed, after the second day, with solid substantial aliments (bread, meat and eggs), with an amount of liquid strictly sufficient to insure digestion. Drink was administered by rectal injections. She took thus, in the space of twenty days, seventy injections of pure water which were all retained.

Conclusions from this and similar operations:

1. Resection of the small intestine can be made for a considerably long portion, two, and even more, metres, without disturbing the digestive system in any appreciable manner.

2. Made under favourable conditions, this may be considered a perfectly appropriate operation.

3. Resection can be made: 1. Either by a direct operation, sewing the two ends together, and immediately closing the external wound; 2. Or by making an incomplete apposition by sutures of the ends of the intestine, combined with an artificial anus. The second and the third are the safest procedures.

4. Resection of fibrous or cicatricial strictures, which are probably more common than we are aware, is likely to be followed by a permanent recovery. So also the resection of epitheliomas. On the contrary, resection for cancerous obstructions gives but a temporary relief, more or less marked, on account of the return of the affection, its metastasis, and the progressive degenerations of the lymphatics.

5. Keeping the intestine closed after the operation, as I did in this case, exempts the patient from any alvine discharge for many days, until the adhesions are sufficiently strong. On the other hand, the abdomen remains a little distended, thus preventing the entrance of air or of septic liquids into the peritoneal cavity. Feeding the patient on solid food reduces the feces to their minimum, and leaves no depressing result.

6. Clysters relieve the thirst, diminish the fluids in the small intestine, and free the patient from much annoyance.—*Chicago Med. Journal*, April, 1881.

Nephrectomy by Lumbar Section.

At a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, April 23, 1881) Mr. ARTHUR E. BARKER read a paper the basis of which was a record of two cases in which he had recently performed nephrectomy by lumbar section for calculous pyelitis. But before considering them in detail, a brief review is given of the whole question of excision of the kidney in the light of all those cases he has been able to collect. Referring to a paper published in last year's Transactions of this Society, in which he tabulated 28 cases of this operation, he points out that of this number 14 recovered and 14 died; but that, deducting those 6 cases in which the operation was performed upon a wrong diagnosis or undesignedly, there remained 13 recoveries and 9 deaths. Passing on then to the new collection, 26 in number, he shows that 12 recovered and 14 died in the gross; or, making the same deduction as above (of 5 cases) that 11 recovered and 10 died out of the remaining 21. Adding the latter to the 22 designed nephrectomies of last year's table, he finds that, out of the resulting 43, recovery took place in 24 and 19 died. Two recoveries where nephrectomy was not premeditated might further be added to these 24. The causes of death in the 28 fatal cases of the combined tables are shown to be as follows: Peritonitis, 8; shock and collapse, 5; pyæmia, 2; uræmia, 2 (in one of these the other kidney had been destroyed by old disease; in the second it as well as the liver was found in a state of advanced fatty degeneration); wound of pleura, with consequent collapse of lung, 1; pulmonary thrombosis, 1; hemorrhage during operation, 1; after operation, 2; exhaustion of vomiting, 1; œdema of lungs, with marked dyspnœa, 1; exhaustion from suppuration, 1; unrecorded, 3. Of the 9 fatal cases out of these 28 where nephrectomy was unpremeditated, 4 died of peritonitis; 1 of hemorrhage during, and 1 after operation; 1 of suppuration and exhaustion; 1 of œdema of the lungs with marked dyspnœa; and in 1 the cause is not recorded. Of the two modes of operation—*i. e.*, in the lumbar region and in the linea alba—the first shows the largest proportion of recoveries, but the author regards the mere numerical analysis of the cases as liable to mislead on this point in view of the varying nature of the conditions for which the operation was undertaken. A careful perusal of all the original records is alone to be relied upon for estimating the two methods correctly.

The histories now recorded are briefly as follows: A married woman, aged thirty-two, was admitted into University College Hospital on June 16th, 1880, on account of a rapidly growing tumour in the left abdomen, first noticed seven weeks before, and accompanied by pain and much lassitude; the pain had existed since patient was five years of age. The tumour on admission measured 14 by 4½ inches, was smooth, and fluctuated obscurely. Diagnosis: Pyonephrosis probably due to calculus. On July the 2d the tumour was aspirated from behind and 18 oz. of fetid pus withdrawn. The next day it had refilled. Nephrectomy was performed on July 5th through an incision made downwards and forwards from midway between the last rib and crest of ilium for four inches. The enormously thickened capsule of the kidney was soon reached, and its removal with the contained kidney attempted. After a considerable loss of time and blood from the vascular and inflamed tissue this line of action had to be abandoned on account of the extremely wide-reaching attachments of this mass of fibrous investing material. The organ itself was then sought for and was easily shelled out of its capsule with the finger and without loss of blood. The pedicle was tied with silk, not without difficulty, and the organ was cut away, after which some twigs spouted and had to be ligatured separately. The whole operation was conducted under Listerian antiseptics and lasted one hour and ten minutes.

The patient died three hours after its completion, of shock. The autopsy showed that it would have been next to impossible to have removed the capsular structures with the organ. They now lay as a great hollow mass of fibrous tissue attached to the spine. Enucleation of the organ alone ought to have been aimed at from the beginning. No bleeding had occurred after the operation, and the peritoneum was not torn.

The next case is that of a woman, aged thirty-eight, to whom an operation for calculous pyonephrosis had been proposed seven months before and refused. The kidney was not at that time much enlarged, though a large stone was found in it by means of an aspirator needle. Six months later the patient requested the author to readmit her into hospital and perform any operation for her relief he might deem advisable, as she had suffered very severely in the interval, and was losing ground. On readmission she was very emaciated and bedridden on account of pain, the slightest movement even in bed causing much distress. On Oct. 5th an operation was undertaken with a view to remove the stone if possible, and if not, of excising the kidney cantaining it. An incision was made from the middle of the twelfth rib downwards and forwards for five inches, and the kidney rapidly exposed. An aspirator needle was then thrust into the organ and the stone struck, about two ounces of pus being withdrawn. A vertical incision was now made down to the calculus with a Paquelin's cautery knife through the cortex of the organ. The stone was very firmly fixed, and, when drawn on with a forceps, broke, one-half only coming away. Very great difficulty being apprehended in removing the remaining half, the excision of the whole organ was determined on. Warned by the last case, the surface of the kidney itself was sought for at once as a guide to enucleation, which was consequently easy. The difficulties of clearing the pedicle, however, were insurmountable in this case, and after many attempts to clear it, it was ligatured *en masse*, the ligature including much of the kidney tissue. It was not, however, possible to draw the silk close enough to justify cutting away the organ, which was therefore left *in situ*. In clearing the lower ends of the organ, something was felt to give way at one spot, to which it was firmly adherent, and it was suspected that the colon had been torn. The operation was completed by a Listerian dressing, having lasted one hour and twenty minutes. The patient died twelve hours later of shock. After death it was seen that the pedicle could not have been cleared, even though the last rib had been resected, which was now done for experiment, with ease and without any damage to the pleura. Also that any endeavour to remove the organ with its investing structures would have ended in failure, owing to the very extensive attachments of the latter. The colon was found to have adhered to the kidney and to have been torn at this spot, where it was soft and sloughy.

The first point brought out by these operations appears to be the necessity of removing the kidney and it alone in such cases, and of not attempting to take away the investing structures with it. Again, the desirability of early operation, before the parts around the organ, and especially the pedicle, have become converted into a mass of dense inflammatory tissue. Thirdly, the want of every kind of data bearing on this operation, and either encouraging or discouraging its performance.

Mr. CLEMENT LUCAS, agreeing with the author's view as to the publication of unsuccessful cases, had not yet published a case of his own, in which fourteen months ago he had performed the operation with good result. The patient had been bedridden for three months with a sinus in the loin; the operation was difficult owing to adhesions, and severe secondary hemorrhage set in two weeks afterwards, only checked by plugging the wound with sponges soaked in perchloride

of iron. He saw the patient a month ago; the wound was healed and he had gained much flesh. In that case pus did not disappear from the urine for many weeks after the removal of the kidney, showing that much pus must come from the bladder and ureter. He thought the lumbar operation preferable to the ventral, except in some cases of tumour, and he advocated a vertical incision from the last rib, and another passing horizontally outwards to the quadratus lumborum. Mr. Morrant Baker in a recent case made a transverse incision, enlarging the wound in a vertical direction. He agreed with Mr. Barker as to the impossibility of removing the capsule with the kidney. In his own case no sign of uræmia, and no vomiting followed.

Mr. Morrant Baker felt strongly the importance of removing the kidney without the capsule. In his recent case (a child eight years old), nephrotomy was first performed, and finding that the removal of the kidney would be easy he determined to do this if necessary. But when he came to perform nephrectomy, two or three months later, the capsule had become so thickened that he was obliged to detach it. This was done without much hemorrhage, no difficulty was met with as regards the pedicle, and the case did well. Apart from the risks of the operation itself, the removal of one kidney does not appear to have much influence. The child had fairly recovered from the effects of the operation in twenty-four hours, and no ill-results ensued.

Mr. Barwell had a case where death ensued shortly after operation. The patient was weakly, and passed much pus in the urine. He made a free incision into the abscess, evacuating much pus, and felt the kidney lying in the sac. The removal of the organ was easily effected, but it had to be detached from the crus of the diaphragm. A ligature was passed round the vessels and ureter, and the kidney then removed. The difficulty was to decide upon suitable cases, and to determine whether they could be dealt with by lumbar incision. He advocated free incision rather than aspiration in dealing with the perinephritic sac in the first instance, for the kidney could then be felt. The incision could be the same as for lumbar colotomy, and antiseptic precautions should be used. In a case of perinephritic abscess under the care of Dr. Silver, Mr. Barwell made a free incision in preference to aspiration, let out thirty-five ounces of pus, felt the kidney, which seemed healthy, inserted a drainage-tube, and the case recovered. The case of nephrectomy to which he had referred proved fatal on the fifth day, the patient dying comatose apparently from uræmia. The other kidney was found to be also the seat of tuberculous disease, so that had the operation been earlier performed the result might have been different.

Mr. Barker, in reply, was glad that Mr. Baker had confirmed his view upon the desirability of removing the kidney from the capsule. Mr. Barwell's suggestion of an exploratory free incision was a good one. In a case of suspected tubercular disease he had preferred such exploration to excision, and evacuated much pus with considerable benefit. The patient survived two months, and after death both kidneys were found to be tubercular. In nephrectomy the time at which the ligatures come away from the pedicle, when this is tied *en masse*, is often much delayed, sometimes after the space of many months.

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Excision of the Hip-Joint in Children.

At a late meeting of the Clinical Society of London (*Lancet*, May 21, 1881) Mr. Howard Marsh presented the Report of the Committee appointed to inquire into the value of excision as a means of treating disease of the hip-joint in childhood, of which the following is an abstract. The points specially investigated were: 1. The indications for the operation; 2, its results; 3, the method of operating; and 4, the nature of the disease.

In 45 cases treated by excision there was a total mortality of 35.5 per cent. from causes connected with the disease; 13.4 per cent. from some form of tubercular disease; the average duration of treatment was 1¼ years; the average shortening amounted to 2¾ in., while the movement at the hip was free, limited, or *nil* in the proportion of 11, 6, and 3. In 260 cases of suppuration treated without excision, there was a mortality of 30.4 per cent. counted as above, 9.2 per cent. from tubercular disease, an average period of treatment of 2½ years, with an average shortening in 33 cases of 1.6 in., and in 35 of the cases 30 walked with slight or no limp, 5 with considerable limp; the movement was free, limited, or *nil* in the proportion of 5, 4½, and 3. In 124 cases without suppuration the total mortality was 10.5 per cent., 7 per cent. from tubercular disease, and the movement was free, limited, or *nil* in the proportion of 5, 3, 3; in 17 of these cases the average shortening was 1.4 in., and in 1 there was apparent lengthening of ¾ in.; of 22 of them 19 walked well, and 3 limped. Sequestra were found in 59 per cent. of the specimens of the disease examined. Of a total of 203 cases of excision collected from various sources 13.7 per cent. died directly from the operation.

The pathological indications for the operation are stated to be necrosis of head of femur, or formation of large sequestra, extensive caries of the bones, intra-pelvic abscess from acetabular disease, and long-continued suppuration. The clinical indications are—rapid onset of suppuration, with severe local and constitutional symptoms, general albuminoid disease and long-continued suppuration in spite of other treatment. Pelvic disease is no bar to the operation. The mortality from tubercular meningitis, in cases of excision, was 4.4 per cent., in other cases of suppuration 6.1 per cent., in cases without suppuration 5.6 per cent. Of 429 cases 9 per cent. died from some form of tubercular disease. The limb is more generally less useful after excision than other modes of careful treatment. Only the diseased bone should be removed, and the great trochanter only when diseased or when there is extensive disease of the pelvis. While the occurrence of necrosis is shown to be proportionately very large, clinical records show that, in many instances, these sequestra are small, and either come away by themselves or are very easily removed in general operations.

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Transplantation of Bone.

At the last meeting of the Royal Society, Dr. MACEWEN presented a paper on a case in which he had successfully transplanted bone. The patient was a child four years of age, who had lost two-thirds of the shaft of the humerus by necrosis fifteen months previously, and in whom no osseous repair had occurred. The limb was of course useless. Dr. MacEwen proceeded first to make a groove in the soft tissues in the position of the bone, relying for this on his anatomical knowledge, and then placed in this groove small fragments of wedges of bone removed from other patients for curved tibiæ. The result has been that a good new bone has been formed, the new portion has united firmly to the upper epiphysis and lower part of the original shaft, and the bone is only half an inch shorter than its fellow. Proper care was taken throughout to have the parts perfectly aseptic. Great interest attaches to this case, which is the first of the kind recorded, and Dr. MacEwen is entitled to warm praise for devising and carrying to such a successful issue the many details necessarily involved in its management. Happily Nature is usually so skilful in the repair of lost parts of bones, that it is not often the surgeon is called upon to make good the loss; but much as there is to marvel at the way in which Nature thus generally plays her part, cases now and then occur in which she fails to supply the lacking portion. Many interesting problems arise in reviewing the facts of this case. The first is,

What was the original condition of the limb? There was evidently a local inability to produce a new bone, and we may presume that in the primary inflammation the periosteum, or at least the deeper active portion of it around the sequestrum, had been destroyed, and the lymph poured out from the surrounding tissues lacked any "ossific stimulus." This the bone-grafts supplied. But how are we to explain the formation of new bone of the proper length and form? We cannot, of course, attribute this power to the transplanted tissue; it might have seemed probable if Dr. MacEwen had used pieces of the opposite humerus, or even any humerus, for his purpose; but we find that pieces of tibia were successful. If not the transplanted bone, are we to say that the ends of the original bone exerted a moulding influence on the ossifying material, or was it the effect of the surrounding tissues? A question naturally arises whether transplantation of bone is essentially better than transplantation of periosteum alone. It is easy to see that when whole pieces of bone are used, the periosteum over them will be probably more active than when stripped off and used alone, as in stripping off it is liable to injury. It would also be exceedingly interesting to know what actually became of the transplanted bone. Did the medullary cells and soft parts live, and the fragments become actually incorporated with the new bone; or was lymph effused around and into the bone, which was then gradually softened down and absorbed, or cast away in secretion? The problem is the same as has been raised about organizing blood-clot. A case published in our columns in 1878 by Dr. MacEwen may be taken as throwing some light on the question; there, in a case of compound fracture of the leg, a fragment two inches and a half long was completely detached, except by a very few slender bridges of periosteum, but being replaced and carefully treated, it was seen after four weeks to become injected with blood, and granulations rose from its surface. Here the whole process was closely watched from day to day, and the large fragment was seen to become firmly incorporated again with the rest of the bone. Other cases, individually perhaps less conclusive, point to the same conclusion; we may refer to one contributed to our columns in 1877 by Mr. Porteous. As so frequently happens in such cases, while Dr. MacEwen has been carrying the case to a successful issue in Glasgow, a similar proceeding had been determined upon by Mr. C. Macnamara of the Westminster Hospital. On Wednesday last we saw him plant several small fragments of bone taken from an amputated metatarsus in a groove prepared in the leg of a little child from whom several months ago he had removed the greater part of the shaft of the tibia. This operation was determined upon and discussed before the class of students more than a month ago, before Dr. MacEwen's case was made public, but it was postponed until the patient had had a few weeks' change of air in the country. Mr. Macnamara remarked, in reference to it, that he had been greatly struck with what he had seen in the practice of Mr. Thompson, who has removed teeth and replaced them several hours later, and they have adhered firmly in a few days; this, with other facts, had encouraged him in his endeavour to make a new bone in the case in point.—*Lancet*, May 28, 1881.

OPHTHALMOLOGY AND OTOLOGY.

New Method of Blepharoplasty.

Dr. LANDOLT (*Archives d'Ophthalmologie*, Dec. 1880) describes a new operation of blepharoplasty, from which he has obtained good results. For this operation, the eyelids may be considered as formed of two layers superposed, the external consisting of skin and orbicularis, with the eyelashes, the internal of

submuscular connective tissue, venous plexuses, tarsal cartilage, and conjunctiva. When these layers are separated in the plane of the forehead, two raw surfaces of considerable extent are obtained, between which a flap, freshened, and from the opposing lid, can be inserted. The upper lid is extremely elastic, and can be drawn down and fixed to the edge of the lower by points of suture. The eye is thus hermetically sealed up, but, after a sufficient time has elapsed, the lid can be cut across, and the palpebral aperture restored. It remains then merely to cover the abraded edges with conjunctiva. Dr. Landolt adds that the operation is indicated chiefly in cases of loss of one lid when its fellow is intact or but little damaged, and in cases in which the two lids are each partially destroyed.—*London Medical Record*, April 15, 1881.

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Colour-Blindness.

A valuable contribution to our knowledge of colour-blindness has been made by Dr. de FONTENAY, of Copenhagen, who has published the result of his researches in the *Nordiskt Medicinisk Arkiv* for 1880. He follows the classification proposed by Holmgren: 1. Total colour-blindness; 2. Partial colour-blindness; (*a*) complete blindness of red, green, or violet; (*b*) incomplete colour-blindness; (*c*) feeble sense of colour. The last is not Daltonism, properly so called, and is omitted in the statistics. The examinations were made by means of Holmgren's coloured wools; and in some of the cases, in which colour-blindness was detected, the results were controlled by various additional tests.

The total number of persons examined by Dr. de Fontenay was 9659, of all ages from eight years upwards; 6945 being above the age of sixteen, and 2714 below that age. Of the whole number, 217, or 2.25 per cent., were colour-blind. Of 4492 adult males, 165, or 3.7 per cent., had colour-blindness. Among these, 1001 belonged to the upper classes, and showed a percentage of 3.09; while in 3491 artisans, labourers, etc., the percentage was 3.87. The percentages of colour-blindness varied greatly with the employment of the individual: thus of 2737 railway officials, 3 per cent. were colour-blind; of 183 post-office officials, 9.28 per cent.; of 930 artisans of various kinds, 3.22 per cent. It is not certain how far these proportions are accidental, or how far the greater prevalence of colour-blindness in the lower orders may be due to defective cultivation of the sense of colour, or to heredity. In any case, Dr. de Fontenay's observations agree with those of Holmgren, Magnus, and others. In order to render his results as exact as possible, Dr. de Fontenay did not confine his researches to a single part of Denmark, but extended them over the whole country.

Of 6,945 adults above the age of sixteen (4492 males and 2453 females), 176, or 2.56 per cent., were colour-blind. Among the females, there were only 11 cases of colour-blindness, or 0.45 per cent. Adding to these the female children who were examined, a total is obtained of 3819, among whom there were 16 colour-blind individuals, or 0.42 per cent.; while, in a total of 5840 male (adults and children), the number of cases of Daltonism was 201, or 3.44 per cent. All the sixteen colour-blind females belonged to the working classes. Among the 2714 children, aged from eight to sixteen, 41, or 1.51 per cent., were colour-blind —viz., 1348 boys, with 36 cases of Daltonism, or 2.67 per cent.; and 1366 girls, with 5 colour-blind, or 0.37 per cent.

Two cases of violet-blindness, which were incompletely examined, being excluded, there were found to be 56 cases of red-blindness, 24 of green-blindness, and 135 of incomplete colour-blindness. In all the cases, both eyes were examined separately, and found to be affected. As regards the relation between the colour of the eyes and colour-blindness, Dr. de Fontenay does not find any special predominance of colour-blindness in dark or in fair individuals.

With regard to hereditary transmission, exact information was obtained in 34 cases, in 27 of which heredity was denied. In two of the cases, the fathers were colour-blind in the same way as the subjects examined. The parents of another had normal vision; but a paternal uncle, two brothers, and the son of the person examined were colour-blind. In the parents and grandparents, and the son, of another person, the colour-sense was normal; but his brother and three maternal uncles had colour-blindness. In another case, the perception of colours was normal in the father, mother, brothers, and sisters; but the maternal grandfather, a maternal cousin (male), and the son of a female cousin on the mother's side, were the subjects of Daltonism. Another of the colour-blind persons had four relatives who were similarly affected; a maternal uncle and cousin, his mother's grandfather, and a brother. There was no instance of consanguineous marriage among Dr. de Fontenay's cases of colour-blindness.

The original paper contains a table of the 217 cases of colour-blindness, in which particulars are given as to the age, the colour of the eyes, the question of heredity, the result of examination with Holmgren's test, and also with other methods when employed, and the diagnosis. The author shows an extensive acquaintance with the literature of the subject; and quotes frequently, for the purpose of illustration and comparison, from the writings of Holmgren, Gladstone, Magnus, Cohn, Joy Jeffries, Wolfe, and others who have investigated it. He says that the increased attention paid to colour-blindness, within the last few years, has been attended in Denmark with some important results. All the *employés* of the public (State) and private railways have been examined, in order to ascertain their sense of colour (except in the case of one private company, which did not think such an examination necessary); and henceforth all candidates for situations on railways are to be tested as to their perception of colour. No law on the subject, however, has as yet been enacted; nor has any regulation been made with regard to the navy and mercantile marine, beyond obliging candidates for admission to the school of naval officers to submit to an examination.

Herr E. J. Mellberg, principal teacher of physics in the Lyceum at Helsingfors, has also examined the colour-sense of 227 pupils in that institution. Among them, he found ten cases of Daltonism, or 4.4 per cent.; four of red-blindness, one of green-blindness, two of violet-blindness, and three of incomplete colour-blindness. In addition, among the boys whose sense of colour is stated to be normal, there were three who confounded light yellowish-red with rose-colour; eighteen who could not distinguish between bluish-green and pure green; fourteen who failed in both these respects; and nine in whom the perception of colours was weak. The ages of the subjects varied from nine to twenty; and only one case of colour-blindness was met with in three above the age of seventeen.

The theory of Young and Helmholtz is regarded by Herr Mellberg as incapable of explaining, completely, either normal vision or colour-blindness. In his opinion, the eye possesses separate organs of perception—not only for three or four different colours, but for all the shades which can be distinguished; and colour-blindness, properly so-called, consists of incapability to receive the impression of a shade of colour, and is not necessarily connected with the impossibility of distinguishing between the impression received and the other colours of the spectrum.—*British Med. Journal*, April 30, 1881.

On the Diseases of the Ear in Locomotive Engineers and Firemen which may endanger the Travelling Public.

During the last few years Dr. Moos has been consulted for diseases of the ear by four locomotive engineers who had already resigned their posts for other reasons. These cases had this in common, that all four dated the origin of their

deafness to the time when they still pursued their calling, that both ears were affected, and that the hearing was greatly diminished. Two of them suffered from constant subjective noises in both ears, one in one ear only, while the fourth heard no subjective noises at all. All four cases could be classified under the heading of *the sclerotic form* of catarrh of the middle ear. This fact led Professor Moos to turn particular attention to the subject in question, *especially as similar observations which he has since made in the case of locomotive engineers and firemen who were still on active duty had brought so vividly before him the danger which these affections might cause to the travelling public.*

After describing several cases which have come under his observation, as well as quoting the remarks of several authors who have drawn special attention to the danger to the travelling public from the affections of the ears of engine-drivers and stokers, he goes on to state that it is "now nearly thirty years since the French railroad surgeons began to pay more particular attention to the health of the employés," and that there is a defect in the German law with regard to the reporting of all cases of deafness to the superintendent of the line. It is not binding enough on the railway surgeons. Government or private railroad corporations should keep their own interests in view in the appointment of surgeons for these examinations. They would be acting for their own advantage in preferring one who has made a special study of ophthalmology and otology. The multiplicity of positions on railroads gives numerous chances for employing deaf men otherwise than in the positions in which their hearing became affected; but even a discharge from active duty on full pension amounts to nothing in comparison with the damages for goods and loss of life which depend on deafness for signals. Think also of the enormous sums often paid for damages in cases of accidents.

As regards the frequency of the deafness, Dr. Moos gives the expression of one engineer while undergoing repeated tests of his hearing: "If all of my fellow-engineers were tested as I have been, more than one-third of them would be found deficient in hearing." If affections of the ear in engineers and firemen are not so frequent as in others exposed to similar noxious influences, *e. g.*, hunters, foresters, machinists, etc.; if extensive statistics yield but a proportionally small percentage; and, further, if these diseases appear only *rarely and exceptionally* in these men, nevertheless, the exception is important enough for the aural surgeon, in conjunction with competent authorities, to give the subject full attention in the future; for even the exceptional cases might lead repeatedly to danger for those who travel by rail.

He sums up his paper with the following conclusions: I. Locomotive engineers and firemen are liable to affections of the ear with noticeable decrease in hearing, usually in both ears, which may be attributed to their employment; these affections may, perhaps, appear earlier in those who are employed on railroads running through mountainous regions than in those on roads in level countries. II. This acquired deafness appears to be more dangerous than colour-blindness as regards the signal code, because the latter is a *congenital* defect, which can be defined precisely before the individuals are put on active duty, while the deafness is an *acquired* disease, slow in its approach, and often unknown to the person affected, until an accident, *e. g.*, a cold or injury, diminishes the hearing more and more on one or both sides, or destroys it completely. III. The percentage of these affections of the ears can only be fixed by extensive statistics and examinations. The fact of its existence is evident; and even if the percentage were but slight, it is of great importance, for even a single exception may cause danger. IV. The ears should be examined very carefully before a certificate of fitness for duty is given; the examination can and should only be undertaken by a physician who has made a special study of otology, or at least understands how

to examine the ear and to test its functions accurately. V. When a man has acted as fireman for a long time, his promotion to the position of engineer should demand especial precautions in this respect. VI. When his definite appointment has been made, he should be warned that his occupation *may* injure his hearing, and that he should present himself for examination when he notices the slightest defect in this respect. VII. The physician should be sworn to report every case of deafness in firemen or engineers to the superintendent of the road. VIII. The hearing of engineers and firemen should be tested at least once in every two years, so as to avoid all possible danger; perhaps oftener in those who run on tunnelled roads.—*Edinburgh Med. Journal*, May, 1881, from *Zeitschrift für Ohrenheilkunde*, vol. ix. No. 4, p. 370.

MIDWIFERY AND GYNÆCOLOGY.

Gastrotomy in Extra-Uterine Pregnancy.

The propriety of opening the abdomen and removing the fœtus in cases of extra-uterine pregnancy is one of those questions which recent advances in abdominal surgery make it necessary to reconsider. The examination and comparison of cases recorded before the introduction of antiseptic precautions, led those who had most carefully considered the matter to the opinion that it was best to refrain from interference until the sac had suppurated and become adherent to the abdominal parietes; that abdominal section before this time brought with it a greater chance of harm than of good. Since then, many writers and speakers have urged—pointing to ovariotomy as an illustration—that the abdomen ought to be opened early; that with practice, and antiseptic precautions, the results would be quite different from what they have been.

This question has been carefully considered in an able article by Professor Litzmann, of Kiel.[1] He objects to the earlier statistical tables, on the ground that the cases included in them have not been sifted with sufficient care. His own opinions are based on a collection of forty-three cases, every one of which is recorded in full detail. In ten of these the operation was performed before the death of the child. In favour of operating before the child dies, there are two reasons commonly given—first, that the mother will probably be in fair general health; second, that there is a chance of safety for the infant.

Too much importance must not be attached to the former consideration, because few women go to the end of an extra-uterine pregnancy without some disturbance of health—*e. g.*, slight local peritonitis, hemorrhages, etc. The great source of danger in operating at this time lies in the fact that the placental circulation is still being carried on. Attempts to separate and remove the placenta at the time of operation end in disaster, even if the attempt itself be successful. And if the opening of the sac and extraction of the fœtus be accomplished without disturbance of the placenta, and this be left to spontaneously come away, there is still much risk, for this process is always one of molecular disintegration and sloughing, and is often attended with severe hemorrhage. And the prospect of saving the child is not so very hopeful as it might at first seem; because in extra-uterine pregnancy the child is often imperfectly developed. Out of the ten cases collected, five of the children died within twenty-four hours.

In considering the question of gastrotomy after the death of the child, it is necessary first to study the processes which attend and follow this event. After the death of the child, the liquor amnii begins to be re-absorbed; it also becomes

[1] Archiv für Gynäkologie.

thick, and dirty-red, gray, or brown in colour, from mixture with meconium and blood-pigment. So long as the membranes are entire, putrefaction does not take place, although, if the sac should be closely connected with the bowel, there may be fetor and the evolution of gas. While this is going on, the health of the mother suffers; there are loss of appetite, vomiting, diarrhœa, slight fever, and wasting. But the point upon which the greater or less risk of operative interference hinges is, the changes which take place in the placenta. These, of course, consist first of all in arrest of the circulation and obliteration of the vessels. But it is very difficult to say how long this takes. In some cases, at periods of ten weeks and upwards after the death of the child, it was found possible to separate and remove the placenta without difficulty and without hemorrhage; while in others, in which quite as long a period had elapsed, dangerous hemorrhage followed attempts to do this. In one case, in which the operation was performed four months after the cessation of fœtal movements, thirteen days after the operation, when the elimination of the placenta was nearly complete, an attempt to remove a piece of it produced fatal hemorrhage. These cases show that it is not possible to fix any time by which the placental vessels will have been obliterated, and there will therefore be freedom from risk of hemorrhage in dealing with it.

These considerations lead Dr. Litzmann to the following practical conclusions: He holds that the great maternal risk inseparable from gastrotomy when the child is living, and the placental circulation still being carried on, together with the doubtful prospect of saving the child, should make us, as a rule, decide against this operation, except in cases in which the pregnancy appears to have passed the tenth (lunar) month, and it can be ascertained by examination that the child is not only living, but large and strong, and that the placenta is not in the situation in which the incision will have to be made. In the absence of these indications, Dr. Litzmann's treatment would be expectant: attention to the general health, to nutrition, and the different bodily functions; and if peritonitic symptoms or expulsive efforts should supervene, complete rest, with narcotics, etc.

Should rupture of the sac take place, Dr. Litzmann thinks there is little to be gained by operation. The chance of saving the child is, of course, less than if rupture had not taken place. The advantage, that after the abdomen is opened it can be emptied of the effused blood and foreign matters, he considers more than counterbalanced by the greater peril that, by disturbing the parts, clots will be dislodged, pressure removed, and thus bleeding may be increased, or re-excited if it have ceased. Treatment, therefore, at this period should be expectant, abdominal section being deferred until there is reason to think that the placental circulation has entirely ceased. The exception to this rule is in cases in which signs are present that indicate putridity of the contents of the sac. In that event it should be evacuated without delay.

Unfortunately there are no sure criteria by which we may tell whether the placental vessels have become obliterated or not; and this is the point upon which the main risk of the operation hinges. If a *souffle* has at one time been heard over the tumour, its subsequently ceasing to be audible may give some hope that the placental circulation has stopped. If we wait five or six months after the death of the child we may by that time reasonably hope that the placental vessels will have become closed; but short of that period we cannot tell what their condition may be. Dr. Litzmann advises that the operation be not deferred beyond the time mentioned, for the patient's general condition will from day to day be deteriorating; the risk will therefore be rather increased by longer waiting.

Dr. Litzmann's conclusions may be taken, we think, as representing the present state of our knowledge on this subject, and at present his conclusions as to practice are sound. Nevertheless, we hope that advancing knowledge and surgical enterprise may soon oblige us to reconsider the accepted conclusions on this point. We hope that those who deviate from the safe and customary line of practice will be careful to publish in detail the results of all their cases.—*Med. Times and Gazette*, May 21, 1881.

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Inversion of the Uterus.

Dr. ATTHILL, at a recent meeting of the Obstetrical Society of Dublin (*British Medical Journal*, April 16, 1881), read a paper on this subject, in which he treated of its causes, symptoms, and treatment. There were no affections of the uterus in which errors of diagnosis were more frequently made. In four out of five cases which had come under his observation, the existence of inversion was not at first suspected; and in three of them, an attempt was made to remove the tumour, which was supposed to be a polypus, the operation being in each case stopped on account of the pain which the action of the *écraseur* caused. He doubted the correctness of the statement made by Dr. Barnes, that a large majority of cases of inversion followed immediately on delivery.

Of the five cases which he took as the test of his communication, only two occurred after delivery; in the other three, it was due to the presence of a fibrous tumour attached to the fundus of the uterus; moreover, the tumour was in each case sessile, and attached very nearly at the centre of the fundus uteri. He had never seen inversion caused by a pedunculated tumour, or by one attached elsewhere than at the centre of the fundus. So also he had found that, in those cases in which inversion occurred immediately after the conclusion of the second stage of labour, and in which the placenta remained adherent till after the accident had occurred, it was invariably attached to the very fundus. He, therefore, concluded that, "in all cases of inversion of the uterus, whether induced by the presence of a tumour, or occurring as a sequence of labour, the condition was the same in both to this extent, a body, which to all intents was a foreign body, was attached to that part of the uterus which lay between the opening of the Fallopian tubes."

He dissented from the views of those writers who held that the inversion occurring immediately after delivery was due to the weakened condition of the uterine wall at the site of the placental attachment, so long as the placenta remained adherent; and, from the record of cases in which the placenta was found to be adherent after inversion had taken place, it was evident that the inversion frequently—and, in his opinion, probably always—must at least have commenced before the placenta was separated from its attachment. The same remarks applied to tumours of the uterus; nor could he believe that their weight had any real effect in dragging down the fundus. In the case of fibroids, therefore, a further cause, viz., the occurrence of expulsive uterine contractions, was requisite to induce inversion. The fundus was that portion of the uterus most susceptible of irritation, and any foreign body brought into contact with the fundus speedily excited contraction. The presence, therefore, of a tumour attached to the fundus centrally, or of the placenta similarly located, might fairly be presumed to have a tendency to induce expulsive uterine action, which, failing to detach and expel the tumour or placenta, ends in depression and inversion of the fundus; but, for this to occur, he deemed it necessary that the tumour should spring from the fundus, or, if it occurred after parturition, the placenta should be attached nearly centrally to the same portion of the intra-uterine surface.

In reply to the objection which might be raised to this theory of the cause of

inversion, viz., that, if the attachment of the placenta to the fundus were a cause prone to induce inversion, it should be of more frequent occurrence as a sequence of parturition than it was, he stated his belief that Dr. Barnes was mistaken when he asserted that the most natural position for the attachment of the placenta was the fundal one. In his opinion, on the contrary, as the cervical zone was a dangerous placental site, from the tendency to the occurrence of hemorrhage before delivery, so the fundal zone was also an abnormal placental site; and, if the attachment there were central, it became dangerous, as tending to the possible occurrence of inversion from (1) weakening of the part which it was of importance should be firm, and (2) from the risk of the placenta, if not rapidly detached, acting as a stimulus and exciting uterine contractions, which, as in the case of the sessile fibroids, ended in depression of the weak part, and finally in inversion of the fundus. The term "active spontaneous inversion" used by Dr. Duncan, might, he thought, be fairly applied to cases produced in the manner described; only, instead of paralysis of the placental site, he, Dr. Atthill, considered abnormal activity of the muscular fibre of the part to be the distinctive feature of the case.

Dr. Atthill then read the notes of an interesting case of inversion of the uterus, which had been mistaken for polypus on first examination. It occurred in an unmarried woman aged 47. After removal of a sessile fibroid from the fundus, as the uterus resisted all his efforts to repose it, made with Aveling's and White's instruments, he determined to amputate it, to prevent the danger of subsequent attacks of hemorrhage. Although he believed that reposition of an inverted uterus was, in almost all cases, possible, and was usually advisable, he considered that the conditions of the case he had read rendered amputation of the uterus more advantageous to the woman, and less dangerous than the protracted manipulation which would have been necessary to effect its permanent restoration to the normal position. She was unmarried, and had passed the age of probable child-bearing; and the tumour was so vascular, that even digital examination produced profuse hemorrhage.

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Extirpation of the Uterus through the Vagina.

Dr. MARTIN (Berlin) relates the history of twelve cases in which he had extirpated the uterus through the vagina. In three cases, the cervix uteri was alone affected; in eight, it was much enlarged and softened; in three, there was adenomatous growth with cancerous masses in the uterine mucous membrane, which caused severe hemorrhage. In four cases only had the uterus retained its normal mobility. As the organ could generally not be drawn down, Dr. Martin operated *in situ*. After irrigating the vagina with a lukewarm solution of carbolic acid, he made an opening into Douglas's space, and fastened the peritoneum by suture to the edges of the vaginal wound. He then made an anterior incision, separated the uterus from its bed of connective tissue as far as its middle, and tilted the organ backwards by means of a hook. This was done more easily when the uterus was made to glide over a spatula introduced into Douglas's space. The broad ligaments were now tied and divided, and the urinary bladder was set free. The hemorrhage attending this proceeding was very slight. The separation of cancerous nodules from the parametrium was not difficult. In four cases the operation was not completed, in consequence of the great extent of the disease and of the existence of inflammatory adhesions of the uterus in front. In one only was there slight injury of the urinary bladder. The ureters were not injured. A drainage-tube having been introduced into Douglas's pouch, the wound was left open, and the vagina was plugged with salicylated cotton-wool and irrigated on the second day. Of the eight cases in which the operation was complete, six

recovered. Dr. Olshausen, in speaking of the vaginal method of extirpating the uterus hitherto employed by him, expressed the hope that it would almost entirely supersede Freund's operation. The latter had only one advantage, that it allowed the extirpation of the lymphatic glands. He objected to Martin's operation *in situ*, that it almost entirely prevented the ligature of single vessels, and rendered manipulation very difficult. Dr. Mikulicz expressed a general approval of Dr. Martin's operation, but disapproved of opening the peritoneal cavity. If, however, the surgeon desired to do this, the method of permanent irrigation formerly recommended by him should be used. Dr. Martin explained that he had met with no insuperable difficulties in operating *in situ*; in cases of necessity, where the vagina was too narrow, the operation might be preceded by a division of the perinæum.—*London Med. Record*, May 15, 1881.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Poisoning by Chloroform.

The recently issued number of the *Nordiskt Mediciniskt Arkiv* contains a report, by Dr. JOHANNES MYGGE, of Copenhagen, of a fatal case of poisoning by chloroform. The patient was a man of intemperate habits, who had, six days before his admission into hospital, drunk nearly forty grammes (more than ten drachms) of pure chloroform. He appears to have rapidly fallen into a state of narcotism, from which he revived four hours later, without the use of remedies. Immediately after this, he several times vomited matter having a strong odour of chloroform; after this, he had watery and slimy stools, mixed with much blood; and, from the night after the catastrophe, he expectorated large quantities of viscous, frothy, and sanguineous matter. On his admission, hepatization of the lower lobe of the right lung was found; there was copious expectoration of sanguineous and frothy matter; the mouth exhaled a very fetid odour; he had frequent vomitings of bilious matter; his evacuations were fluid and viscous, but not mixed with blood; and he had pain in the epigastrium; sleep was disturbed. He gradually sank, and, after having had slight convulsions, died two days after admission to hospital. The necropsy showed gray hepatization of the lower lobe, and congestion of the other parts, of the right lung, and recent fibrinous adhesions over the whole surface. The mucous membrane of the stomach, over a surface as large as a child's hand, close to the large *cul-de-sac*, was reduced to fibres, and partially detached; and a more limited portion of the anterior wall of the organ was destroyed, with the exception of the serous and subserous membranes. The upper part of the jejunum, for the space of one and a half metres (nearly five feet), presented numerous ulcers, varying in size from a pea to a bean; they were irregular, grayish, partially arranged in transverse lines, and tinged here and there with bile Nothing of importance was found elsewhere. Dr. Mygge gives a table of sixteen other cases of poisoning by the drinking of chloroform, which have been reported in medical journals, and refers to others. His statistics, however, are incomplete, as the table is only brought down to 1872. He remarks that congestion of the lung has been found in almost every case in which a necropsy has been made; and that in one of the fatal cases there was an expectoration of sanguineous viscous matter similar to that which occurred in this case. As regards the digestive canal, the symptoms observed have been similar in nearly all the cases hitherto described, but less intense than in the present case; and in one case only besides that of Dr. Mygge was any destruction of tissue found.—*British Medical Journal*, April 16, 1881.

OBITUARY NOTICES.

GEORGE ALEXANDER OTIS, Surgeon and Brevet Lieutenant-Colonel, United States Army, Curator of the Army Medical Museum, and Editor of the Surgical volumes of the Medical and Surgical History of the War of the Rebellion, died at Washington, D. C., February 23, 1881, at the comparatively early age of fifty years.

Surgeon Otis was descended from a cultivated New England family. His great-grandfather, Ephraim Otis, was a physician who practised at Scituate, Mass. His grandfather, George Alexander Otis, was a well-known citizen of Boston, Massachusetts, whose early years were occupied by commercial pursuits. Mr. Otis was a man of education and literary tastes, who, so soon as his circumstances permitted, retired from business, and devoted himself entirely to books. He is remembered especially on account of his translation of Botta's History of the War of the Independence of the United States of America, published in 1820, an undertaking in which he was encouraged by James Madison and John Quincy Adams, and which he accomplished so well that the book ran through twelve editions. He died at an advanced age in June, 1863.

The father of Surgeon Otis, also George Alexander Otis, was born in 1804. He attended the preparatory course at the Boston Latin School, studied and graduated at Harvard College, after which he devoted himself, with much promise, to the profession of law. Mr. Otis was married February 9, 1830, to Anna Maria Hickman, of Newton, Massachusetts, daughter of Harris Hickman, a lawyer, born at Front Royal, Virginia, who had enjoyed an excellent professional reputation in early life in the Shenandoah Valley, and subsequently at Detroit, in the then Territory of Michigan. Of this marriage the subject of our biographical sketch was the only issue, Mr. Otis dying of consumption, June 18, 1831.

George Alexander Otis was born in Boston, Massachusetts, November 12, 1830. Left an infant to the tender care of his widowed mother, his early years were nurtured by a devoted love, which accompanied him through youth and manhood, smoothed the pillow of his last illness, and followed him to the grave.

When old enough to go to school, George was sent at first to the Boston Latin School, and afterwards to the Fairfax Institute, at Alexandria, Virginia, where he was prepared for college. In 1846 he entered Princeton College as a student of the sophomore class, and graduated, with the degree of A. B., in 1849. Princeton conferred upon him the degree of Master of Arts in 1852.

At Princeton Otis appeared as a slender, rather delicate youth, of highly nervous organization, whose literary tastes were not satisfied with the comparatively narrow curriculum of his Alma Mater. Always standing well in his college classes, that he did not take a still higher place was not due to lack of ability or of studious habits, but rather to his love of general literature, and the large proportion of his time expended in its cultivation. He had already acquired a fondness for French literature, which he never afterwards lost, and a taste for verse so far cultivated that when he came to graduate the Faculty assigned to him the task of preparing the commencement-day poem. Retiring and reserved in his manners, often silent and abstracted, the few who were admitted to his intimacy found his nature gentle and sympathetic, and several of the friendships he then formed lasted throughout his life.

By this time Otis had selected medicine as his profession. After leaving Princeton he went to Richmond, Virginia, where his mother was then residing, and began his studies in the office of Dr. F. H. Deane, of that city. In the fall of 1849 he proceeded to Philadelphia, and matriculated in the Medical Depart-

ment of the University of Pennsylvania. That institution conferred upon him the degree of Doctor of Medicine in April, 1851. In those days the medical teachings of the University of Pennsylvania were shaped in no small degree by the influence of the School of Paris. Indeed, this was then true of almost all American medical teaching, and ambitious American medical students still looked with enthusiasm towards the lecture-rooms and hospitals of the French capital as affording the richest opportunities for the completion of their medical education. Accordingly Otis spent in Paris the first winter after he graduated in Philadelphia. He sailed from New York on the 16th of August, and reached Paris in the latter part of September, 1851.

During his stay in Paris Otis made diligent use of the opportunities afforded for professional improvement. A manuscript note-book left among his papers shows that he devoted much time to the clinical teachings of the great French masters of that day. He listened to the instructions of Louis, Piorry, Cruveilhier, and Andral. It was at the time his expectation to give especial attention to the subject of ophthalmic surgery, and accordingly he attended with great diligence the clinics and didactic lectures of Desmarres, but he found the attractions of general operative surgery too strong to permit exclusive attention to this chosen branch, and he continually watched the operations, and listened to the lessons of such surgeons as Nélaton, Civiale, Malgaigne, Jobert (de Lamballe), Roux, and Velpeau. Moreover, the popular excitement which preceded the coup d'état of December 2, 1851, and the probability of bloodshed, directed his attention to the subject of military surgery. Already, November 4th, his note-book records a morning spent at the library of l'Ecole de Médecine in the study of Baron Larrey's "Mémoire," with which he was so well pleased that he at once purchased a copy for closer study. After the coup d'état a considerable number of those wounded at the barricades were carried to the hospitals for treatment, and Otis was thus enabled to take his first practical lessons in military surgery from Velpeau, Roux, and Jobert (de Lamballe).

Meanwhile, however, his diligence in medical studies did not prevent him from spending many pleasant hours in the art galleries and museums, where he found much to gratify his æsthetic nature. Moreover, he took a deep interest in the stirring panorama of French politics, as is shown by a series of letters he took time to write to the *Boston Evening Transcript*.

In the spring of 1852 Otis returned to the United States, reaching New York in the latter part of March. Immediately after his return he established himself at Richmond, Virginia, where he opened an office for general medical and surgical practice, and where his tastes and ambition soon led him to embark in his earliest enterprise in the domain of medical literature. In April, 1853, he issued the first number of *The Virginia Medical and Surgical Journal*. Dr. Howell L. Thomas, of Richmond, was associated with him as co-editor, but the financial risk was assumed entirely by Otis. The journal appeared monthly, each number containing over eighty pages octavo, the whole forming two annual volumes, commencing respectively with the numbers for April and October. It was handsomely printed, and contained from time to time a fair share of original articles, chiefly by physicians residing in Richmond and other parts of Virginia; but its most striking characteristic was the number of translations and abstracts from current French medical literature which appeared in its pages. Dr. Thomas, like his colleague, was a good French scholar, and had studied in Paris; both took part in the labour of translation and condensation, and as most of the articles were unsigned, it is not always possible to ascribe particular ones to the proper editor.

Notwithstanding its merits several causes contributed to interfere with the financial success of the journal. On the one hand, it was unsupported by the influence

and business connections of any established publishing house, or of the faculty of any medical college. On the other hand, the success it might perhaps otherwise have achieved as a local organ of the medical profession in Virginia was impaired by the existence of an already-established rival, *The Stethoscope*, a monthly medical journal edited by Dr. P. Claiborne Gooch, at that time Secretary of the Medical Society of Virginia.

The field of local patronage was not large enough to support two such journals, and both suffered from the competition. Before the close of 1853 Otis found it necessary to secure an associate who could share in the pecuniary support of his enterprise. Thomas retired from the editorship, and was succeeded, after the issue of the December number, by Dr. James B. McCaw, of Richmond, who became also part owner of the journal. *The Stethoscope* appears to have suffered still more, for about the same time its editor entered into negotiations with the Virginia Medical Society, as a result of which he sold the journal, and the number of *The Stethoscope* for January, 1854, appeared as "the property and organ of the Medical Society of Virginia, edited by a committee of the society."

This arrangement was, undoubtedly, for a time very prejudicial to the prosperity of the *Virginia Medical and Surgical Journal*, but its editors bravely maintained the struggle, and in the heated discussion concerning the purchase of *The Stethoscope*, that took place during the meeting of the Medical Society of Virginia in April, 1854, Otis, with characteristic gallantry, refused to surrender his independence to secure the passage of resolutions complimentary of the management of his journal.

Otis had, by this time, become dissatisfied with his prospects of professional success in Richmond, and circumstances led him to select Springfield, Massachusetts, as his place of residence. He removed to that town during the summer of 1854. This necessitated changes in the management of the *Virginia Medical and Surgical Journal*. In May, 1854, Dr. J. F. Peebles, of Petersburg, Virginia, became associated with McCaw as one of its editors, while Otis retired from active participation in its direction, retaining, however, a literary connection with it as corresponding editor.

Meanwhile, a single year proved sufficient to disgust the Virginia Medical Society with the task of editing a journal. Its management was found fruitful of unfortunate dissensions, and in May, 1855, the society wisely concluded to sell out. Under new auspices *The Stethoscope* continued to appear monthly until the close of the year, when an arrangement was effected by which it was united with *The Virginia Medical and Surgical Journal*, under the title of *Virginia Medical Journal*, with McCaw as editor, and Otis as corresponding editor.

Although his residence in Richmond had failed to secure for Otis a lucrative practice, this could not well have been expected at his early age. It had, however, given him some opportunities for acquiring experience at the bedside as well as in literature, and if he did not secure the profitable favour of the laity, he at least won for himself the respect and confidence of his professional brethren. He was an active member of the Virginia Medical Society, and represented that body in the American Medical Association at the Richmond meeting of May, 1852. He was also a member of the Richmond Medico-Chirurgical Society, which he represented in the American Medical Association at the New York meeting of May, 1853.

Established at Springfield, Massachusetts, Otis occupied himself more exclusively than heretofore with the duties of private practice, and with better pecuniary success than he had enjoyed at Richmond. He continued for a time to contribute translations, abstracts, and various items to the *Virginia Medical Journal*; but as the demands of his business became more urgent these became fewer,

although he continued to be nominally corresponding editor of that journal until the close of 1859. As time wore on he began to obtain considerable local reputation as a skilful surgeon, and would probably have acquired both wealth and distinction in civil surgical practice but for the outbreak of the War of the Rebellion. This changed the whole tenor of his life. So soon as it became clear to his mind that the struggle was likely to be a prolonged one, he resolved to devote himself to the service of his country. He received from Governor Andrew the appointment of Surgeon to the 27th Regiment of Massachusetts Volunteers, of which Horace C. Lee was Colonel, and was mustered into the service of the United States, September 14, 1861.

The 27th Regiment was raised in the western part of the State of Massachusetts, and was mustered into the service of the United States at Springfield. It left the State November 2, 1861, and proceeded by rail to the vicinity of Annapolis, Maryland, where it went into camp. Here it remained until January 6, 1862, when it was embarked on transports, and accompanied the North Carolina Expedition under General Burnside. It took part in the affair on Roanoke Island, February 8th; landed near Newburn, North Carolina, March 13th, and met with considerable losses during the battle of Newburn on the following day. The regiment remained in North Carolina until October 16, 1863, when it embarked for Fortress Monroe, Virginia, and after a short encampment at Newport News, proceeded to Norfolk, Virginia, where it remained through the following winter.

During almost the whole of this time Surgeon Otis accompanied his regiment and shared its fortunes; sometimes, indeed, performing other duties in addition to his regimental ones, as during the summer and fall of 1862, when he acted as Medical Purveyor to the Department of North Carolina. The exceptional periods were a few days in September, 1862, when he went as medical officer in charge of the steamer "Star of the South" with sick from Newburn to New York, and a few months in the early part of 1863, when he served on detached duty in the Department of the South. While in the Department of the South he attracted the attention of Surgeon Charles H. Crane, U. S. Army, then Medical Director of the Department (afterwards Assistant Surgeon-General of the Army), on whose recommendation he was placed, March 28th, by command of General Hunter, in charge of the hospital steamer "Cosmopolitan," then at Hilton Head, South Carolina, and directed the operations of that vessel in the transportation of the sick and wounded within the limits of the department until May 10, when he was ordered to carry a number of sick and wounded to New York harbour, and, after landing them, to turn over the vessel to Surgeon Wm. Ingalls, of the 5th Massachusetts regiment. This order was promptly executed, the vessel was turned over as directed, May 13th, and Otis received a leave of absence for twenty days, at the expiration of which he returned to his regiment.

January 22, 1864, he was again detached and ordered to Yorktown, Virginia, to assume the duties of surgeon-in-chief of General Wistar's command. This responsible position he filled in a satisfactory manner from the first of February, when he reported for duty at Yorktown, until April 11th, when he was relieved and assigned as surgeon-in-chief to General Heckman's division of the 18th Army Corps, then encamped near Portsmouth, Virginia. May 10th he received a sick leave for fifteen days, which, as his health was not restored at its expiration, was extended for thirty days more. June 26, 1864, he tendered his resignation as surgeon of the 27th Massachusetts regiment, and received an appointment as Assistant Surgeon of United States Volunteers, to date from June 30, 1864.

At this time business connected with his resignation and re-appointment brought Otis to Washington, where he renewed his acquaintance with Surgeon Crane, then on duty in the Surgeon-General's Office. Surgeon Crane, while Medical

Director of the Department of the South, had been most favourably impressed with the culture and ability of the Massachusetts surgeon, and now so effectually commended him to the Acting Surgeon General as to induce that officer to ask his detail for duty in his office. An order to that effect was issued by the Secretary of War July 22, 1864, and Otis was immediately assigned as an assistant to Surgeon John H. Brinton, U. S. Volunteers, at that time Curator of the Army Medical Museum, and engaged in the duty of collecting materials for the Surgical History of the War of the Rebellion. August 30, 1864, Otis was promoted to the rank of Surgeon of Volunteers, and October 3, 1864, was ordered to relieve Surgeon Brinton of his various duties.

From the first Otis devoted himself with signal zeal and ability to the large and important duties of his new position. Immediately after he took charge of the Surgical Division he inaugurated a system of record books, which proved ultimately of great service in securing the accurate and complete record of individual cases for use in the Surgical History. The rapidly increasing surgical collection of the Army Medical Museum also received great attention from him, and he expended much time in its supervision and study.

Immediately after the close of the war, the Surgeon General of the Army became desirous of securing, by appropriate legislation, the funds necessary to complete and publish the Medical and Surgical History of the War. Accordingly he called upon Otis, and his colleague, Woodward, who had charge of the collection of materials for the Medical History, and of the medical branches of the Museum, to make reports on the extent and nature of the materials collected for the purpose in question. These reports were published by the Surgeon-General November 1, 1865, as 'Circular No. 6,' for the year 1865. This circular was widely distributed, attracted great attention at the time, and satisfactorily attained the object which led to its publication. It formed a quarto volume of 166 pages, with a number of illustrations intended to indicate the character of those regarded as desirable for the Medical and Surgical History. The first half of the volume was occupied by the Surgical Report prepared by Otis. It was a thoughtfully prepared document, which excited the universal admiration of military surgeons in Europe as well as in America.

It became necessary after the close of the war to retain many of the staff surgeons of volunteers in the service for duty in the general hospitals or other purposes after the great armies had been disbanded, and Otis was of course retained with that rank as long as possible; but it was foreseen that the great work he had commenced would occupy a number of years, and he was induced to make arrangements for entering the army as an assistant surgeon. Accordingly he passed the examination prescribed by law, and February 28, 1866, received an appointment as Assistant Surgeon, U. S. Army, but he was not finally mustered out of service as surgeon of volunteers until June 4, 1866, and hence did not accept his commission as Assistant Surgeon, U. S. A., until the 6th of that month.

Meanwhile Otis was devoting himself to the study and arrangement of the materials collected for the Surgical History with indefatigable energy, and while engaged upon that work received authority to publish two preliminary studies on special subjects connected therewith, which greatly increased the reputation he had won by his report in Circular No. 6. The first was *A Report on Amputations at the Hip-joint in Military Surgery*, published as Circular No. 7, Surgeon-General's Office, July 1, 1867. In this he not merely presented and analyzed the histories of the several amputations at this joint reported to the Surgeon-General's Office during the civil war, but discussed with the critical abilities of a master the whole literature of the subject so far as it was at the time

accessible to him. An examination of this monograph shows that he had already pretty well begun to emancipate himself from the leading-strings of the French school, and had fully acquired the desire so manifest in his subsequent work to compare and weigh all accessible human knowledge on each branch of his subject before arriving at his own conclusions.

These characteristics were, if possible, still more fully displayed in the second of the studies referred to: *A Report on Excisions of the Head of the Femur for Gunshot Injury*, published as Circular No. 2, Surgeon-General's Office, January 2, 1869; a monograph in which the subject was treated in a manner similar to that of Circular No. 7, but with a still greater wealth of literary resources. The appearance of each of these monographs was welcomed with acclamations of praise, in which the authoritative expressions of approval by the recognized masters of European surgery were united with the encomiums of the American military surgeons.

Great interest in the forthcoming Surgical History of the War was excited by these publications, and very high expectations were formed, which, however, were fully realized by the character of the *First Surgical Volume*. This volume was issued in 1870. It treated of the special wounds and injuries of the head, face, neck, spine, and chest, was richly illustrated, and discussed the vast amount of material collected during the civil war, in connection with the several subjects treated, with characteristic learning and ability. The *Second Surgical Volume* was issued in 1876. It treated of the wounds and injuries of the abdomen, pelvis, back, and upper extremities. Fully equal in interest and execution to the first volume, it was much more voluminous. The two volumes represent a prodigious amount of patient labour on the part of the editor. The extremely favourable manner in which they were received in surgical circles at home and abroad is well known.

During the interval between the appearance of these two volumes, and subsequently, Otis found time to prepare and publish several valuable reports on subjects connected with military surgery, of which the most important were: *A Report of Surgical Cases treated in the Army of the United States from* 1865 *to* 1871, issued as 'Circular No. 3,' from the Surgeon-General's Office, August 17, 1871; *A Report on a Plan for Transporting Wounded Soldiers by Railway in time of War*, Surgeon-General's Office, 1875, and *A Report on the Transport of Sick and Wounded by Pack Animals*, issued as 'Circular No. 9,' from the Surgeon-General's Office in 1877. A full list of his official and other publications would occupy too much space to be presented in this place.

In the midst of this successful but laborious career, during the month of May, 1877, his health, never very robust, gave way; and although he survived for several years, he was a constant invalid, to whom death came in the end as a welcome release from suffering. He was engaged at the time of his death on the third surgical volume, which he has left in an unfinished condition; a colossal fragment that must require great labour to complete in a manner worthy of the first two volumes.

Otis received the appointments of captain, major, and lieutenant-colonel by brevet, to date from September 29, 1866, "for faithful and meritorious services during the war." He was promoted to be surgeon in the army, with the rank of major, March 17, 1880. He was elected a foreign member of the Medical Society of Norway, October 26, 1870; a foreign corresponding member of the Surgical Society of Paris, August 11, 1875, and an honorary life member of the Massachusetts Medical Society in February, 1877. He was also at the time of his death a member of the Philosophical Society of Washington, and of the Academy of Natural Sciences of Philadelphia.

In expressing his high appreciation of the character and value of the surgical works of his late colleague, the writer of these pages does but echo the universal language of competent critics throughout the civilized world. On all sides the opinion has been expressed that they have not only made the name of Otis illustrious, but have reflected the greatest credit upon the intelligent liberality of the government of the United States, and upon the Medical Corps of the Army.

During his connection with the Museum, Otis always took deep interest in the anatomical collection, now embracing about two thousand human crania. As early as January, 1873, the Surgeon-General at his instance made a fruitless endeavour to procure an appropriation for the publication of an illustrated catalogue of this valuable collection. To facilitate this object Otis prepared a check-list of the specimens, which was printed in 1876, but the pecuniary means for preparing and publishing the larger work have not yet been provided.

Until his last illness Otis retained much of the fondness for polite literature which characterized him in early life. He had, moreover, considerable taste for music and the fine arts. These qualities made his companionship charming to those who enjoyed his intimacy. Hesitating, often embarrassed, in his manner in ordinary conversation, especially with strangers, he became eloquent when warmed by the discussion of any topic in which he took interest, and he took interest in a great variety of subjects besides those directly connected with the work of his life.

Many warm personal friends share the grief of his family at his untimely death, which, as has been well said by the Surgeon-General, "will be deeply deplored not only by the Medical Corps of the Army, but by the whole medical profession at home and abroad."

J. J. W.

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Isaac Ray, M.D., LL.D., formerly Superintendent of the Butler Hospital for the Insane at Providence, R. I., and late President of the Association of Medical Superintendents of American Institutions for the Insane, died at Philadelphia, on the 31st of March, 1881, aged 74 years.

Of all those, who either in this country or elsewhere, have been devoted to the care of the insane, and have been widely known, and specially distinguished for long service as medical directors of hospitals for the insane, and for able treatment of this class of sufferers, no less than as authors of a high character—few, if any, have attained a more distinguished, or more deserved eminence than the subject of this notice.

As numerous able papers from his pen have appeared at various times in this Journal, it is especially proper, that something more than a brief notice of his long and remarkably useful life should be given in its columns.

The death of such a man as Dr. Ray, in the full maturity of years and wisdom, with a profound practical knowledge rarely possessed by any one, of the branches of medicine to which he was devoted, is no ordinary loss to society, to the profession of which he was so honoured a member, and to that class of the afflicted, by whom the benefit of his services was most frequently solicited.

Isaac Ray, M.D., LL.D., was descended from an honest and intelligent, but not peculiarly distinguished New England family. He was born in the town of Beverly, Massachusetts, on the 16th of January, 1807. It was there that he commenced his early education, soon, however entering Phillips' Academy, at Andover, Mass., and subsequently Bowdoin College, at Brunswick, Me., where he remained a most diligent student till the year 1824, when he was compelled to leave on account of the impaired condition of his health. It may be mentioned as indicative of one of the traits of his character, conspicuous through life—that of never leaving any of his time unemployed—that during his vacations, he was en-

gaged in the honourable position of teaching school, held by so many of the distinguished men of this country in the commencement of their careers, in which vocation he showed marked ability.

As soon as his health was sufficiently improved he began the study of medicine in the office of Dr. Hart, of Beverly, and subsequently spent a considerable time with Dr. Shattuck, of Boston, and graduated at the Medical Department of Harvard University in 1827. He began the practice of his profession in the city of Portland, Maine, in the same year. While a resident of this town he delivered his first course of lectures, which were on Botany, a branch of science in which he always felt much interest. It was at one of these lectures, that he first met Miss Abigail May Frothingham, a daughter of Judge Frothingham, of Portland, a most estimable lady, to whom he was married in 1831, and who now survives him, after a happy union of within just two months of fifty years. From this marriage were born two children, the elder a daughter, of lovely character, who died at the age of fourteen, and a son of whom more special mention will be made in a subsequent part of this notice.

About two years after beginning the practice of his profession at Portland, inducements were offered to Dr. Ray to remove to Eastport in the same state, in which town he afterwards fixed his residence.

It was while living in Eastport that Dr. Ray first became interested in insanity and the treatment of the insane, and circumstances that occurred in the trial of certain cases in the courts of Maine, with the enunciation of the then prevalent views in regard to the responsibility of the insane, led him to undertake the preparation of a work, that has since become familiar to the medical and legal professions everywhere, and which is recognized as a standard authority wherever the English language is spoken. "The Jurisprudence of Insanity" is now so well known that it is scarcely necessary in this connection to do more than to say that at the time of its publication it was far in advance of public opinion, and that the sentiments expressed in it were so different from what had been received as fully established, that as might have been expected, for a time, it met with not a little adverse criticism, especially from sources not acquainted with the disease. It was not long, however, before its true character was acknowledged and properly appreciated, and no higher authority on the subjects referred to, is now to be met with anywhere. Six editions of it have been exhausted, and it was one of Dr. Ray's regrets during his last days, that he was unable to prepare a seventh, which had been asked for by his publishers, and for which he had valuable additional materials.

In the year 1841, Dr. Ray received the appointment of Medical Superintendent of the Maine Hospital for the Insane, at Augusta, and at once assumed the duties of that position, remaining in it till he was invited by the Board of Managers of the Butler Hospital, at Providence, Rhode Island, to become Superintendent of that institution—which was then about to be organized—and to undertake the supervision of the erection of the buildings.

Dr. Ray's observations as the Superintendent of a State institution had given him valuable experience in regard to this class of hospitals, and had showed him the weak points likely to occur in their management, and conspicuously the risks of political influence or personal advantage being allowed to jeopardize the best interests of the insane by sacrificing—as has too often occurred in our country—the very best men for such positions, simply because they could not be induced to do anything they deemed wrong, or that would lessen the usefulness of an institution. On all such points Dr. Ray held emphatic opinions, and his views most vigorously expressed have done much to secure a proper mode of organization for most of the hospitals for the insane in this country.

Dr. Ray found in his new position at Providence, much that made the place particularly pleasant to him. It permitted him to carry out many of his views of construction and organization; none of those connected with the management of the institution, were likely to allow political motives ever to influence their actions, and their stations in society were such as to place them above all suspicion of being actuated by selfish motives in its government. Besides this, an opportunity was given him to carry out a long cherished desire to visit the more prominent institutions for the insane in Europe, and of comparing by personal observation the advantages and the defects of these institutions here and abroad. As soon as possible after his appointment, Dr. Ray sailed for Europe and made the best use of his time in visiting and examining a large number of the most noted hospitals for the insane in Great Britain and on the continent. After his return he devoted himself to the erection of the Butler Hospital, which was opened for the reception of patients under his superintendence in 1847. He continued to fill this office with very marked ability, and to the satisfaction of all who were interested in it, till January 1867, when his impaired health compelled him, to the regret of every one in any way connected with the institution, to resign a post in the performance of the duties of which, he had had so much enjoyment.

Thus released from the cares and anxieties everywhere incident to the conscientious management of a large hospital for the insane, he appreciated greatly the rest that was now allowed him. He spent the greater part of the year in visiting his professional brethren, and in selecting a place for his future residence, finally choosing the city of Philadelphia, in which he settled in the autumn of 1867, and where he continued to live, till his death at his residence on Baring Street on the morning of the 31st of March, 1881, being then in the 75th year of his age. The change of climate, and the release from labour and unavoidable cares, had a beneficial effect on Dr. Ray's health, and from being unable to walk but a short distance, he became strong enough to extend his daily walks as far as four or five miles. This improved condition of his health gave him new pleasure in his literary work, and in an interested attention to the many cases, in which his opinion was asked as an expert, or in consultation with his medical brethren.

Dr. Ray was a member of many professional associations, and in any with which he was connected he was always found to be an active, intelligent, and valuable associate.

He was one of the thirteen superintendents who, in the year 1844, established the Association of Medical Superintendents of American Institutions for the Insane, and was always deeply interested in its proceedings, rarely absent from its meetings, and scarcely ever failing to read suggestive papers, or to engage to the satisfaction of all, in its most important discussions. He recognized fully the importance of the Association, and the value to the community and the insane of the great work it had accomplished. He was always one of the staunchest of its defenders, when assailed by perhaps well meaning, but impracticable writers, and a most valuable supporter of the "Propositions" which have now stood the test of more than a quarter of a century's trial in every section of the country. To this result his voice and writings contributed largely. He was President of this Association from 1855 to 1859. At its meeting at Providence he was the recipient of distinguished attentions from his old associates, friends, and neighbours, as well as from the Rhode Island Medical Society (of which he was at one time President), and from Brown University, which at this time conferred upon him the honorary degree of Doctor of Laws.

Elected a Fellow of the College of Physicians of Philadelphia, he always manifested great interest in its transactions, was a regular attendant of its meetings, and a participant in the discussions which were elicited by the reading of

papers. The esteem by which he was held by this body may be judged by the resolutions adopted at the time of his decease.

He was one of the original projectors of the Social Science Association, and was thoroughly interested in all its work. His papers read before it were always indicative of a thorough study of the subjects coming under the observation of this Association, and his suggestions rarely failed to have practical worth. There were, indeed, few matters of any kind, political or social, that interested the community, which did not receive the benefit of his matured views and well considered conclusions, either through the public press or in his writings of a more permanent character.

He was appointed by the Judges of Philadelphia one of the Guardians of the Poor of the city, and to this important trust, he at once gave no small share of his time and attention. His lifelong studies, as well as his practical knowledge as a hospital superintendent, qualified him in an eminent degree to detect the defects of the system long in practice in the Philadelphia Almshouse, and no one could be better fitted to suggest the changes that were necessary to make the portion of that institution devoted to the insane, worthy of the name of a hospital, and capable of giving the greatest amount of good to its inmates. No better proof of the false system of a political management for benevolent institutions could be given, than the fact, that notwithstanding the devoted and unrecompensed services of such a man as Dr. Ray, those in authority were willing to dispense with them, and to replace him and men of equal integrity, by persons who, no one could claim, had the first elements of qualification for such a position.

Dr. Ray was about the medium height, and did not possess a very robust constitution. His grave and marked features, his abundant hair, for many years entirely white, and always somewhat in disorder from his manner of treating it, made him, although of moderate stature, a striking object whenever he appeared in court or in any deliberative body. And the effect of his presence was increased when he spoke, by the clearness and distinctness of his language, by his dignified manner, and by the conviction, which his impressive mode of treating a case rarely failed to bring to his hearers, that they were listening to one who was thoroughly familiar with his subject, and whose testimony was based on a careful study of the case, and an earnest desire to arrive at just conclusions in reference to it.

For many years he had been troubled with a cough and copious expectoration, which seemed to be bronchial in its character, but which did not appear very materially to affect his general health, and which Dr. Ray after consultation with able authorities, concluded could not be relieved by any special treatment. Indeed in his ordinary pursuits he seemed able to do all that could reasonably be expected of him, and it was not until the sudden and unexpected death of his only son, and for many years his only child, to whom he was devotedly attached, that any material change in his condition was observed. Dr. B. Lincoln Ray, the son alluded to, was an accomplished writer, and a highly educated physician, many of whose productions must be familiar to the readers of this Journal, to which he was a frequent and always welcome contributor, especially in the critical and review department, in which he manifested peculiar ability. Although of a vigorous-looking physical development, he had not been well for many months, and he himself seemed conscious that a serious brain trouble was impending. The very last visit he paid, was made in company with his honoured father, to the writer of this notice, then suffering from a serious illness, and at this time those about him noticed indications of what within a few days was developed suddenly into unmistakable cerebral disease of the most serious character, and of which after great suffering he died within a period of less than two days.

This sudden loss of such a son to whom he was deeply attached, of whose abilities he was justly proud, and to whom his parents had looked forward as the support of their advancing years, was a shock to the elder Dr. Ray from which he never recovered. Although his interest in his friends and in public affairs remained undiminished, to his intimate associates there was, after this sad event, from the first, a change that was unmistakable, and to them it was obvious that a single week had done the work that ought hardly to have been expected from years in the ordinary current of life. He ceased to write with his accustomed interest, complained of its being a toil to him to do so, and mourned that he was unable to carry out many of his plans, and that his anticipations of a literary executor familiar with all his views, and who would have done justice to his labours, were gone forever. He was always uncomplaining. Although his cough was at times troublesome, and now and then he had some oppression in his breathing, he suffered little pain. Afterwards he found it best that he should avoid all active exercise, as, for some time before he was confined to his house, great discomfort had been the certain result of even a moderate amount of walking, of which formerly he had been so fond, and to which a portion of every day had been regularly devoted. From the time of his confinement to his house, his days were mostly spent in an easy chair which had been given to him by an esteemed brother superintendent, and for the weeks after he ceased to go down stairs, he still spent a part of each day reclining in this chair near the projecting window of his room, passing the time in reading or in looking out upon the active scenes of the street, or the beautiful gardens beyond it. His strength, however, gradually failed; day by day he grew weaker, and his emaciation became somewhat distressing to him, still almost without an exception, some part of every day found him in his wonted position in his easy chair, and each night after being wheeled in it to the door of the adjoining room, he walked with assistance to his bed.

After retiring at the usual hour on the 30th of March, he had a troublesome spell of coughing, but when it had passed he slept calmly and only once inquired the time of the night. So quiet and so calm was his sleep, that he made no movement, uttered no sound, but when approached in the morning, it was found that his noble spirit (probably some time before) had passed from this world to that where the weary are at rest, and so peacefully, that his devoted wife resting by his side had no idea how long before the great change had occurred. It was such an end as Dr. Ray would have asked for, well fitting the simplicity and the quiet dignity of his character. It was touching, too, that his spirit should thus have passed away, his bed surrounded by the valuable collection of books he had loved so well, for as a matter of convenience he had turned his library into his sleeeping room, and had rested there during the last nights of his life.

Thus closed the career of one recognized by his fellow-men everywhere, as one who had passed a long life of unselfish usefulness, and the beneficent results of whose labours will live long after him. Although to a stranger Dr. Ray's manners might at first seem somewhat austere, this opinion would be corrected by a short acqnaintance. With his intimate friends and associates he had the most genial qualities. His conversational powers were quite remarkable, for he talked well upon every subject, and what he said was interesting alike to the gravest judge, to the most profound specialist, and to the little children with whom he was always a favourite. His ability of adapting himself to the society he was with, was indeed one of the striking features of his powers of conversation, which have not often been surpassed. Those who knew him best, loved him most, and appreciated most highly his varied traits of character, his gentleness and firmness, his unselfish interest in his fellow-men, and his readiness to give his valuable time for the benefit of those who were in affliction and sorrow. T. S. K.

UNIVERSITY OF PENNSYLVANIA—MEDICAL DEPARTMENT.

Thirty-Sixth Street and Woodland Avenue (Darby Road), Philadelphia.

One Hundred and Sixteenth Annual Session, 1881-82.

PROFESSORS.

WILLIAM PEPPER, M.D., Provost.
HENRY H. SMITH, M.D., Emeritus Professor of Surgery.

JOSEPH LEIDY, M.D., LL.D., Professor of Anatomy.
RICHARD A. F. PENROSE, M.D., LL.D., Professor of Obstetrics and Diseases of Women and Children.
ALFRED STILLÉ, M.D., LL.D., Professor of Theory and Practice of Medicine, and Clinical Medicine.
D. HAYES AGNEW, M.D., LL.D., John Rhea Barton Professor of Surgery and Clinical Surgery.
WILLIAM PEPPER, M.D., Professor of Clinical Medicine.
WILLIAM GOODELL, M.D., Professor of Clinical Gynæcology.
JAMES TYSON, M.D., Professor of General Pathology and Morbid Anatomy.
HORATIO C. WOOD, M.D., Professor of Materia Medica, Pharmacy, and General Therapeutics.
THEODORE G. WORMLEY, M.D., LL.D., Professor of Chemistry.
JOHN ASHHURST, Jr., M.D., Professor of Clinical Surgery.
HARRISON ALLEN, M.D., Professor of Physiology.
WILLIAM F. NORRIS, M.D., Clinical Professor of Diseases of the Eye.
GEORGE STRAWBRIDGE, M.D., Clinical Professor of Diseases of the Ear.
HORATIO C. WOOD, M.D., Clinical Professor of Nervous Diseases.
LOUIS A. DUHRING, M.D., Clinical Professor of Diseases of the Skin.

Matriculates who have not received a collegiate degree are required to pass a preliminary examination in English and Physics (for details of which see Announcement), and to attend three winter courses of instruction of five months each, consisting of graded didactic lectures, clinical lectures, and practical work in laboratories and hospitals.

In the graded curriculum adopted, the elementary branches are taught in the *first* course, and students are finally examined at its conclusion upon General Chemistry, Materia Medica and Pharmacy. In the *second* term, while a sufficient repetition of unfinished branches is secured, certain more practical ones are added, and the examinations on Anatomy, Physiology, and Medical Chemistry at the end of the term are final. In the *third* course is added practical bedside instruction in Medicine, Surgery, and Gynæcology, with clinical facilities in the specialties: and, at its end, students are examined on General Pathology and Morbid Anatomy, Therapeutics, Theory and Practice of Medicine, Surgery, and Obstetrics.

Students, who have attended one course in a regular* medical school, will be admitted as students of the second course in the University, after having satisfactorily passed an examination in General Chemistry and Materia Medica and Pharmacy. Students who have attended two courses in a regular medical school, will be admitted as students of the third course after examination in General and Medical Chemistry, Materia Medica and Pharmacy, Anatomy, and Physiology.

Graduates of other regular medical schools in good standing will be admitted as students o the third course in this institution without any examination.

Graduates of Colleges of Pharmacy and Dental Colleges in good standing are admitted to the *second* course in the University without an examination.

In the Spring Session, beginning the latter part of March, and ending about the middle of June, a valuable course on practical and scientific subjects by a large corps of professors and lecturers is given; and the laboratories of Chemistry, Pharmacy, Histology, Physiology, and Pathology are open, affording a valuable post-graduate course.

A course of practical instruction for graduates has been established, for particulars of which see the Announcement of the Medical Department.

The Lectures of the Winter Session of 1881–82 *will begin on Monday, October* 3, *and end on the last day of February.*

The Preliminary Course will begin on the second Monday in September.

FEES IN ADVANCE.—1st course of lectures, including matriculation and dissection, $155. Dissecting material one dollar a part. 2d course, including dissection, $150. 3d course, including operating and bandaging, $110. Graduation fee $30.

For Announcement giving full particulars address

JAMES TYSON, M.D., SECRETARY,
P. O. Box 2838, Philadelphia.

* Homœopathic and Eclectic schools are not recognized as being in this category.

JEFFERSON MEDICAL COLLEGE,
PHILADELPHIA.

THE Fifty-seventh Session of the Jefferson Medical College will begin on Monday, October 3d, 1881, and will continue until the end of the third week of March, 1882. Preliminary Lectures will be held from Monday, 12th of September.

PROFESSORS.

JOSEPH PANCOAST, M D,
General, Descriptive, and Surgical Anatomy (Emeritus).

S. D. GROSS, M.D., LL.D., D.C.L. Oxon., LL.D Cantab.,
Institutes and Practice of Surgery.

ELLERSLIE WALLACE, M.D.,
Obstetrics and Diseases of Women and Children.

J. M. DA COSTA, M.D.,
Practice of Medicine.

WM. H. PANCOAST, M.D.,
General, Descriptive, and Surgical Anatomy.

ROBERT E. ROGERS, M.D.,
Medical Chemistry and Toxicology.

ROBERTS BARTHOLOW, M.D, LL.D.,
Materia Medica and General Therapeutics.

HENRY C. CHAPMAN, M.D.,
Institutes of Medicine and Medical Jurisprudence.

The enlargement of the College, now in progress, will enable the Faculty to perfect the present system of *Practical Laboratory Instruction*, in all the Departments. Rooms are assigned in which each Professor, with his Demonstrators, will instruct the Class, in Sections, in direct observation and hand-work in the Chemical, Pharmaceutical, Physiological, and Pathological Laboratories. Operative and Minor Surgery, and investigation of Gynæcological and Obstetric conditions on the *Cadaver*, will be taught, as also Diagnosis of Disease on the living subject.

This course of Instruction is *free of charge, but obligatory upon* candidates for the Degree, except those who are Graduates of other Colleges.

A SPRING COURSE of Lectures is given, beginning early in April, and ending early in June. There is no additional charge for this Course to matriculates of the College, except a registration fee of five dollars; non-matriculates pay forty dollars, *thirty five of which, however, are credited on the amount of fees paid for the ensuing Winter Course.*

CLINICAL INSTRUCTION is given *daily* at the HOSPITAL OF THE JEFFERSON MEDICAL COLLEGE throughout the year by Members of the Faculty, and by the Hospital Staff, which is constituted as follows:—

Surgeons.

JOHN H. BRINTON, M.D.,
S. W. GROSS, M.D.,
R. J. LEVIS, M.D.

Ophthalmic Surgeon.

PROF. WILLIAM THOMSON, M.D.

Aural Surgeon.

L. TURNBULL, M D.

Physicians.

J. SOLIS-COHEN. M.D.,
JAMES C. WILSON, M.D.,
OLIVER P. REX, M.D.,
W. W. VANVALZAH, M.D.

Gynæcologists.

F. H. GETCHELL, M.D.,
J. EWING MEARS, M D.

Pathologist.

MORRIS LONGSTRETH, M.D.

FEES.

Matriculation Fee (paid once)	$5 00	Practical Anatomy	$10 00
Ticket of each Professor (7) $20	140 00	Graduation Fee	30 00

Fees for a full course of Lectures to those who have attended two full courses at other (recognized) Colleges—the matriculation fee, and $70 00
To Graduates of less than three years of such Colleges—the matriculation fee, and 50 00
To Graduates of three years, and upwards, of such Colleges—the matriculation fee only.

The Annual Announcement, giving full particulars, will be sent on application to
ELLERSLIE WALLACE, *Dean.*

Graduates who may see this notice will confer a great favor by sending to the Dean a postal card with the correct names and residences of themselves, and of other graduates in their vicinity, to whom announcements may be sent.

UNIVERSITY OF THE CITY OF NEW YORK.
MEDICAL DEPARTMENT.

410 East Twenty-Sixth St., opposite Bellevue Hospital, New York.

FORTY-FIRST SESSION—1881–82.

FACULTY OF MEDICINE.

REV. HOWARD CROSBY, M.D., LL.D., Chancellor of the University.
ALFRED C. POST, M.D., LL.D., Emeritus Professor of Clinical Surgery; President of the Faculty.
CHARLES INSLEE PARDEE, M.D., Professor of Otology; Dean of the Faculty.
JOHN C. DRAPER, M.D., LL.D., Professor of Chemistry.
ALFRED L. LOOMIS, M.D., Professor of Pathology and Practice of Medicine.
WILLIAM DARLING, A.M., M.D., LL.D., F.R.C.S., Professor of General and Descriptive Anatomy.
WILLIAM H. THOMSON, M.D., Professor of Materia Medica and Therapeutics.
J. W. S. ARNOLD, M.D., Professor of Physiology and Histology.
J. WILLISTON WRIGHT, M.D., Professor of Surgery.
WM. M POLK, M.D., Professor of Obstetrics and Diseases of Women and Children.
FANEUIL D. WEISSE, M.D., Professor of Practical and Surgical Anatomy.
LEWIS A. STIMSON, M.D., Professor of Pathological Anatomy.
R. A. WITTHAUS, M.D., Professor of Physiological Chemistry.
A. L. RANNEY, M.D., Adjunct Professor of Anatomy.
JOSEPH E. WINTERS, M D , Demonstrator of Anatomy.
D. B. ST. JOHN ROOSA, M.D., Professor of Ophthalmology.
WM. A. HAMMOND, M.D., Surgeon-General, U. S. A. (Retired), Professor of Diseases of the Mind and Nervous System.
STEPHEN SMITH, M.D., Professor of Orthopædic Surgery.
J. W. S GOULEY, M.D., Professor of Diseases of the Genito-Urinary System.
MONTROSE A. PALLEN, M.D., LL.D., Professor of Gynæcology.
HENRY G. PIFFARD, M.D., Professor of Dermatology.
A. E. MACDONALD, M.D., Professor of Medical Jurisprudence.
JAMES L. LITTLE, M.D., Professor of Clinical Surgery.
F. R. STURGIS, M.D., Professor of Venereal Diseases.

THE COLLEGIATE YEAR is divided into three Sessions: a Preliminary Session, a Regular Winter Session, and a Spring Session.

THE PRELIMINARY SESSION will commence September 21, 1881, and will continue until the opening of the Regular Winter Session. It will be conducted on the plan of that Session.

THE REGULAR WINTER SESSION will commence on October 5, 1881, and end about the 1st of March, 1882.

The location of the new College edifice being immediately opposite the gate of Bellevue Hospital, and a few steps from the ferry to Charity Hospital, Blackwell's Island, the Students of the University Medical College are enabled to enjoy the advantages afforded by these Hospitals, with the least possible loss of time. The Professors of the practical Chairs are connected with the Hospitals, and the University Students are admitted to *all the Clinics* given therein *free of charge*.

In addition to the daily Hospital Clinics, there are eight Clinics each week in the College Building. Five Didactic Lectures will be given daily in the College building, and Evening Recitations will be conducted by the Professors of Chemistry, Practice, Anatomy, Materia Medica, etc., Physiology, Surgery, and Obstetrics, upon the subjects of their Lectures.

THE SPRING SESSION embraces a period of ten weeks, beginning in the first week of March and ending the last week of May. The daily Clinics, Recitations, and Special Practical Courses will be the same as in the Winter Session, and there will be Lectures on Special Subjects by the Members of the Faculty.

THE DISSECTING ROOM is open throughout the entire Collegiate year; material is abundant, and it is furnished free of charge.

STUDENTS WHO HAVE STUDIED TWO YEARS, and who have attended two full courses of lectures, may be admitted to examination in Chemistry, Anatomy, and Physiology, and, if successful, will be examined at the expiration of their full course of study on Practice, Materia Medica and Therapeutics, Surgery, and Obstetrics; but those who prefer it may have all their examinations at the close of their full term.

FEES.

For Course of Lectures	$140 00
Matriculation	5 00
Demonstrator's fee, including material for dissection	10 00
Graduation fee	30 00

For further particulars and circulars address the Dean,

Prof. CHAS. INSLEE PARDEE, M.D.,
University Medical College, 410 East 26th St., New York.

HARVARD UNIVERSITY.

MEDICAL DEPARTMENT, BOSTON, MASS.

NINETY-NINTH ANNUAL ANNOUNCEMENT (1881–82).

FACULTY.

CHARLES W. ELIOT, LL.D., President.
CALVIN ELLIS, M.D., Dean, and Jackson Professor of Clinical Medicine.
OLIVER W. HOLMES, M.D., LL.D., Parkman Professor of Anatomy.
HENRY J. BIGELOW, M.D., Professor of Surgery.
FRANCIS MINOT, M.D., Hersey Professor of the Theory and Practice of Physic.
JOHN P. REYNOLDS, M.D., Professor of Obstetrics.
HENRY W. WILLIAMS, M.D., Professor of Ophthalmology.
DAVID W. CHEEVER, M.D., Professor of Clinical Surgery.
JAMES C. WHITE, M.D., Professor of Dermatology.
ROBERT T. EDES, M.D., Professor of Materia Medica.
HENRY P. BOWDITCH, M.D., Professor of Physiology.
FREDERICK I. KNIGHT M.D., Instructor in Laryngoscopy.
CHARLES B. PORTER, M D., Instructor in Surgery.
J. COLLINS WARREN, M.D., Instructor in Surgery.
REGINALD H. FITZ, M.D., Shattuck Professor of Pathological Anatomy.
WILLIAM L. RICHARDSON, M.D., Instructor in Obstetrics.
THOMAS DWIGHT, M.D., Instructor in Topographical Anatomy and Histology.
EDWARD S. WOOD, M D., Professor of Chemistry.
HENRY H. A. BEACH, M.D., Demonstrator of Anatomy.
WILLIAM H. BAKER, M.D., Instructor in Gynæcology.
WILLIAM B. HILLS, M D., Instructor in Chemistry.
WILLIAM F. WHITNEY, M.D., Curator of the Anatomical Museum.

OTHER INSTRUCTORS.

FRANK W. DRAPER, M.D., Lecturer on Forensic Medicine.
CHARLES F. FOLSOM, M.D., Lecturer on Mental Diseases.
HENRY P. QUINCY, M.D., Assistant in Histology.
AMOS L. MASON, M.D., Assistant in Clinical Medicine.
THOMAS WATERMAN, M.D, Assistant in Anatomy.
EDWARD N. WHITTIER. M.D., Assistant in Clinical Medicine.
WILLIAM P. BOLLES, M.D., Instructor in Materia Medica.
ELBRIDGE G. CUTLER, M D., Assistant in Pathological Anatomy.
FREDERICK C. SHATTUCK, M.D., Assistant in Clinical Medicine.
W. STURGIS BIGELOW, M D., Assistant in Surgery.
GEORGE M. GARLAND, M.D., Assistant in Physiology.
MAURICE H. RICHARDSON, M.D., Assistant in Anatomy.
CHARLES S. MINOT, S.D., Lecturer on Embryology.
WILLIAM C. EMERSON, M.D., Assistant in Chemistry.
W. J. OTIS, M.D., Prosector in Surgical Anatomy.

The following gentlemen will give special clinical instruction:—

FRANCIS B. GREENOUGH, M.D., and EDWARD WIGGLESWORTH, M.D., in Syphilis.
J. ORNE GREEN, M.D., and CLARENCE J. BLAKE, M.D., in Otology.
JOSEPH P. OLIVER, M.D., and THOMAS M. ROTCH, M.D., in Diseases of Children.
SAMUEL C. WEBBER, M.D., and JAMES J. PUTNAM, M.D., in Diseases of the Nervous System.
JAMES R. CHADWICK, M.D., in Diseases of Women.
T. B. CURTIS, M.D., in Diseases of the Urinary Organs.
E. H. BRADFORD, M.D, in Orthopedic Surgery.
O. F. WADSWORTH, M.D., in Ophthalmoscopy.

All candidates for admission who hold no degree in arts or science, must pass a written examination on entrance to this School, in English, Latin, Physics, and any one of the following subjects: French, German, Elements of Algebra or of Plane Geometry, Botany. The admission examination for 1881–82 will be held June 27, at Boston, Chicago, and Cincinnati; on September 26th, at Boston only. The requirements are as stated in the Catalogue.

Instruction is given by lectures, recitations, clinical teaching, and practical exercises, distributed throughout the academic year. In the subjects of anatomy, histology, chemistry, and pathological

anatomy, laboratory work is largely substituted for, or added to, the usual methods of instruction. The year begins September 29, 1881, and ends on the last Wednesday in June, 1882. It is divided into two equal terms, either of which is more than equivalent to the former "Winter Session," as regards the amount and character of the instruction.

The course of study recommended by the Faculty covers four years, but until further notice the degree of Doctor of Medicine will continue to be given upon the completion of three years of study, to be as ample and full as heretofore. The degree of Doctor of Medicine *cum laude* will be given to candidates who have pursued a complete four years' course, and obtained an average of 75 per cent. upon all the examinations of this course. In addition to the ordinary degree of Doctor of Medicine as heretofore obtained, a certificate of attendance on the studies of the fourth year will be given to such students desiring it as shall have attended the course, and have passed a satisfactory examination in the studies of the same.

ORDER OF STUDIES AND EXAMINATIONS.

Four Years' Course.

For the First Year.—Anatomy, Physiology, and General Chemistry.

For the Second Year.—Practical and Topographical Anatomy, Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, Surgery, and Clinical Surgery.

For the Third Year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

For the Fourth Year.—Ophthalmology, Otology, Dermatology, Syphilis, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Obstetrics, Clinical and Operative Obstetrics, Clinical Medicine, Clinical and Operative Surgery, Hygiene, Forensic Medicine.

Students are divided into four classes, according to their time of study and proficiency, and during their last year will receive largely increased opportunities of instruction in the special branches mentioned. Students who began their professional studies elsewhere may be admitted to advanced standing; but all persons who apply for admission to the advanced classes must pass an examination in the branches already pursued by the class to which they seek admission. The examinations are held in the following order:—

At the end of the first year—Anatomy, Physiology, and General Chemistry.
End of second year—Topographical Anatomy, Medical Chemistry, Materia Medica, and Pathological Anatomy.
End of third year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Surgery.
End of fourth year—Ophthalmology, Otology, Dermatology, Syphilis, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Obstetrics, Clinical and Operative Obstetrics, Clinical Medicine, Clinical and Operative Surgery, Hygiene, Forensic Medicine.

Three Years' Course.

For the First Year.—Anatomy, Physiology, and General Chemistry.

For the Second Year.—Practical and Topographical Anatomy, Medical Chemistry, Materia Medica, Pathological Anatomy, Clinical Medicine, and Clinical Surgery.

For the Third Year—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, Clinical Surgery, Ophthalmology, Dermatology, Syphilis, Otology, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Hygiene, Forensic Medicine.

Students following this course are classified as heretofore, and the instruction in the special branches is of the same character as that which has been given for several years. The examinations of the first two years are common to both groups of students. The final examinations at the close of the third year are in the following subjects: Therapeutics, Obstetrics, Surgery and Clinical Surgery, Theory and Practice, Clinical Medicine.

Examinations in all subjects are also held before the opening of the School, beginning September 26th.

Requirements for a Degree.—Every candidate must be twenty-one years of age; must have studied medicine three or four full years, have spent at least one continuous year at this school, have passed a written examination upon all the prescribed studies of the course taken, and have presented a thesis.

Course for Graduates.—For the purpose of affording to those already Graduates of Medicine additional facilities for pursuing clinical, laboratory, and other studies, in such subjects as may specially interest them, the Faculty has established a course which comprises, in addition to the list of special departments above stated, the following branches: Histology; Physiology; Medical Chemistry; Pathological Anatomy. On payment of the full fee the privilege of attending any of the other exercises of the Medical School, the use of the laboratories and library, and all other rights accorded by the University will be granted. Single branches may also be pursued. Graduates of other Medical Schools who may desire to obtain the degree of M.D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course. Examination on entrance not required.

Fees.—For Matriculation, $5; for the Year, $200; for one Term alone, $120; for Graduation, $30. For Graduates' Course, the fee for one year is $200; for one Term, $120; and for single courses such fees as are specified in the Catalogue. Payment in advance.

Members of any one department of Harvard University have a right to attend lectures and recitations in any other department without paying additional fees.

For further information, or Catalogue, address

Dr. R. H. FITZ, *Secretary*,
18 Arlington St., Boston, Mass.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA—NEW ORLEANS.

FACULTY.

T. G. Richardson, M.D., Professor of General and Clinical Surgery.

Samuel M. Bemiss, M.D., Professor of the Theory and Practice of Medicine and Clinical Medicine.

Stanford E. Chaillé, M.D., Professor of Physiology and Pathological Anatomy.

Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine.

Samuel Logan, M.D., Professor of Anatomy and Clinical Surgery.

Ernest S. Lewis, M.D., Professor of General and Clinical Obstetrics and Diseases of Women and Children.

John B. Elliott, M.D., Professor of Materia Medica and Therapeutics, and Hygiene.

Albert B. Miles, Demonstrator of Anatomy.

The next annual course of instruction in this Department (now in the forty-eighth year of its existence) will commence on Monday, the 17th day of October, 1881, and terminate on Saturday, the 25th day of March, 1882. The first three weeks of the term will be devoted exclusively to Clinical Medicine and Surgery at the Charity Hospital; Practical Chemistry in the Laboratory; and dissections in the spacious and airy Anatomical Rooms of the University.

The means of teaching now at the command of the Faculty are unsurpassed in the United States. Special attention is called to the opportunities presented for

CLINICAL INSTRUCTION.

The Act establishing the University of Louisiana gives the Professors of the Medical Department the use of the great Charity Hospital as a school of practical instruction.

The Charity Hospital contains nearly 700 beds, and received, during the last year, more than six thousand patients. Its advantages for professional study are unsurpassed by any similar institution in this country. The Medical, Surgical, and Obstetrical Wards are visited by the respective professors in charge daily, from eight to ten o'clock A. M., at which time all the students are expected to attend and familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of injury and disease.

The regular lectures at the hospital, on Clinical Medicine by Professors Bemiss and Joseph Jones, Surgery by Professors Richardson and Logan, Diseases of Women and Children by Professor Lewis, and Special Pathological Anatomy by Professor Chaillé, will be delivered in the amphitheatre on Monday, Wednesday, Thursday, and Saturday, from 10 to 12 o'clock A. M.

The administrators of the hospital elect annually, by competitive examinations, *fourteen resident students*, who are maintained by the institution.

TERMS.

For the Tickets of all the Professors	$140 00
For the Ticket of Practical Anatomy	10 00
Matriculation Fee	5 00
Graduation Fee	30 00

Candidates for graduation are required to be twenty-one years of age; to have studied three years; to have attended two courses of lectures, and to pass a satisfactory examination.

Graduates of other respectable schools are admitted upon payment of the Matriculation and half lecture fees. They cannot, however, obtain the Diploma of the University without passing the regular examinations and paying the usual Graduation Fee.

As the practical advantages here afforded for a thorough acquaintance with all the branches of medicine and surgery are *quite equal* to those possessed by the schools of New York and Philadelphia, the same fees are charged.

For further information, address T. G. RICHARDSON, M.D., *Dean*.

CHICAGO MEDICAL COLLEGE.

MEDICAL DEPARTMENT OF THE NORTHWESTERN UNIVERSITY.

SESSIONS OF 1881–2.

H. A. JOHNSON, A.M., M D.,
Emeritus Professor of the Principles and Practice of Medicine.

N. S. DAVIS, M D., LL D., DEAN,
Professor of Principles and Practice of Medicine and of Clinical Medicine.

EDMUND ANDREWS, A.M., M D.,
Professor of Clinical Surgery.

RALPH N. ISHAM, M.D.,
Professor of Principles and Practice of Surgery.

EDWARD W. JENKS, M.D., LL D.,
Professor of Medical and Surgical Diseases of Women and of Clinical Gynæcology.

E. O. F. ROLER, A.M., M.D.,
Professor of Obstetrics and Diseases of Children.

SAMUEL J. JONES, A.M., M.D.,
Professor of Ophthalmology and Otology.

J. H. HOLLISTER, M.D.,
Prof. of General Pathology and Pathological Anatomy.

J. S. JEWELL, A.M., M.D.,
Professor of Nervous and Mental Di eases.

WM. E. QUINE, M.D.,
Professor of Materia Medica, General Therapeutics and Hygiene.

MARCUS P. HATFIELD, A.M., M.D.,
Professor of Chemistry and Medical Jurisprudence

LISTER CURTIS, A.M., M.D.,
Professor of Histology.

R L. REA, M.D.,
Professor of Anatomy.

HENRY GRADLE, M.D,
Professor of Physiology.

ROSWELL PARK, A.M., M.D.,
Demonstrator of Anatomy.

The Collegiate Year in this Institution consists of a REGULAR AUTUMN AND WINTER SESSION, a special SESSION FOR PRACTITIONERS, and a SPRING SESSION. THE REGULAR SESSION begins September 27, 1881, and closes March 28, 1882.

This College was the first in the United States to adopt a graded system of instruction. All applicants for admission must possess at least a good English education, and present full evidence of the same. If an applicant has received the degree of A. B., or presents a certificate from some reputable Scientific School, High School, or Academy, no matriculation examination will be required; otherwise he must sustain a satisfactory examination before a committee of the Faculty. The students are divided into 1ST YEAR, 2D YEAR, and 3D YEAR CLASSES, instructions being given simultaneously in different lecture rooms. All students are advised to pursue the three years' graded course, but if students so elect, they can enter the 2d Year's Course if they have studied medicine for one year previously, and can sustain a satisfactory examination upon the studies embraced in the 1st Year's Course.

The Clinical advantages of this College, with the great number of Dispensary, College Clinic and Hospital patients, cannot be surpassed. All professors of practical branches are members of the staff of Mercy or Cook County Hospital, or other charities. Students receive instruction, by the Faculty or Assistants, *without extra charge*, in those special branches which in some Institutions are considered as the perquisites of private teachers, for which additional fees are required (such as Gynæcology, Ophthalmology, Otology, Laryngology, Physical Diagnosis, etc.). For several sessions each senior student has had the privilege of attending upon one or more obstetrical cases, and of witnessing important obstetrical operations.

It is the aim of the Faculty to make all instruction in the College pre-eminently practical

THE PRACTITIONERS' COURSE, designed for Practising Physicians only, was inaugurated in 1879. It has proven so satisfactory to all concerned that it will be continued and constitute a portion of each Collegiate year. This course will begin the day following the public Commencement exercises, and continue for four weeks, affording, by means of didactic and daily clinical instruction, special advantages to physicians for a rapid, yet thorough, practical review of the most important subjects in Medicine and Surgery. The SPRING SESSION consists of Recitations, Laboratory and Dispensary work, and Clinical and Didactic Lectures, beginning April 1, 1882, and closing June 1, 1882.

FEES FOR COLLEGIATE YEAR (except Practitioners' Course), $75. Registration Fee, $5. Demonstrator's Ticket, $5. Laboratory Ticket, $5. Mercy Hospital Ticket, $6. Final Examination Fee, $30. For Practitioners' Course, including Laboratory, Anatomical, and Hospital Tickets, $30.

For the Annual Announcement and Catalogue, or for any information relating to the College, address

N. S. DAVIS, M.D., LL.D., DEAN,
65 *Randolph St., Chicago.*

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, consists of the following Physicians:—

D. H. Storer, M.D.	Henry J. Bigelow, M.D.	Calvin Ellis, M.D.
Morrill Wyman, M.D.	Richard M. Hodges, M.D.	Samuel Cabot, M.D.

At the annual meeting, held June 1, 1881, it was voted that a prize of three hundred dollars be awarded to Herbert W. Page, F.R.C.S., Assistant Surgeon of St. Mary's Hospital, London, for a dissertation on "Injuries to the Back, without apparent Mechanical Lesion, in their Surgical and Medico-Legal Aspects."

No prize was awarded to any dissertation on the first subject proposed for 1881.

The following are the questions proposed for 1882:—

I. Sewer Gas, so-called (the gas found in Sewers): What are its Physiological and Pathological Effects on Animals and Plants? An Experimental Inquiry.

The author of a dissertation on the above subject, considered worthy of a prize, will be entitled to a premium of Three Hundred Dollars.

II. The Therapeutic Value of Food, administered against, or beyond, the Patient's Appetite and Inclination.

The author of a dissertation on the above subject, considered worthy of a prize, will be entitled to a premium of Two Hundred Dollars.

Dissertations on the above subjects must be transmitted, post paid, to D. H. Storer, M.D., 182 Boylston Street, Massachusetts, *on or before the first Wednesday in April*, 1882.

The following are the questions proposed for 1883:—

I. Measles; German Measles; and their Counterfeits.

II. The Differential Diagnosis of Abdominal Tumours; especially those connected with the Genito-Urinary Organs.

The author of a dissertation, considered worthy of a prize, on either of the subjects proposed for 1883, will be entitled to a premium of Two Hundred Dollars.

Dissertations on these subjects must be transmitted as above, on or before the first Wednesday in April, 1883.

Each dissertation must be accompanied by a sealed packet on which shall be written some device or sentence, and within which shall be inclosed the author's name and residence. The same device or sentence is to be written on the dissertation to which the packet is attached.

The writer of each dissertation is expected to transmit his communication to the President of the Committee, D. H. Storer, M.D., 182 Boylston St., Boston, Massachusetts, in a distinct and plain handwriting, *and with the pages bound in book form*, within the time specified.

Any clew by which the authorship of a dissertation is made known to the Committee will debar such dissertation from competition.

Preference will be given to dissertations which exhibit original work.

All unsuccessful dissertations are deposited with the Secretary, from whom they may be obtained, with the sealed packet unopened, if called for within one year after they have been received.

By an order adopted in 1826, the Secretary was directed to publish annually the following votes:—

1st. That the Board do not consider themselves as approving the doctrines contained in any of the dissertations to which premiums may be adjudged.

2d. That in case of publication of a successful dissertation, the author be considered as bound to print the above vote in connection therewith.

RICHARD M. HODGES, M.D.,
Secretary.

Boston, Mass.

COLLEGE OF PHYSICIANS AND SURGEONS—Baltimore, Md.

FACULTY OF PHYSIC.

Thomas Opie, M.D., Professor of Obstetrics.

John S. Lynch, M.D., Prof. of Principles and Practice of Medicine, and Clinical Prof. of Heart, Throat, and Lungs.

E. Lloyd Howard, M.D., Professor of Materia Medica, Therapeutics, and Medical Jurisprudence.

Thomas S. Latimer, M.D., Professor of Physiology and Diseases of Children.

Augustus F. Erich, M.D., Professor of Diseases of Women.

Aaron Friedenwald, M.D., Professor of Diseases of the Eye and Ear.

Charles F. Bevan, M.D., Prof. of Anatomy, Genito-Urinary and Orthopedic Surgery.

Oscar J. Corkery, M.D., Professor of Surgery.

Abram B. Arnold, M.D., Prof. of Clin. Med. and Diseases of the Nervous System.

Wm. Simon, M.D., Ph.D., Professor of Chemistry.

George H. Rohé, M.D., Clinical Professor of Dermatology.

Richard Gundry, M.D., Superintendent of Spring Grove Insane Asylum, Professor of Mental Diseases.

J. W. Chambers, M.D., Demonstrator of Anatomy.

J. H. Branham, M.D., Assistant Demonstrator.

Wm. D. Booker, M.D., Demonstrator of Physiology.

The Regular Winter Session will begin Oct. 1, 1881, and continue five months.

The City Hospital, Maryland Woman's Hospital, and Maryland Maternité, being owned and controlled exclusively by the Faculty, enables the Professors to utilize a large amount of clinical material to the very best advantage.

For full information send for a Catalogue.

THOMAS OPIE, M.D., Dean,
N. E. Cor. Carey and Lexington Sts., Baltimore, Md.